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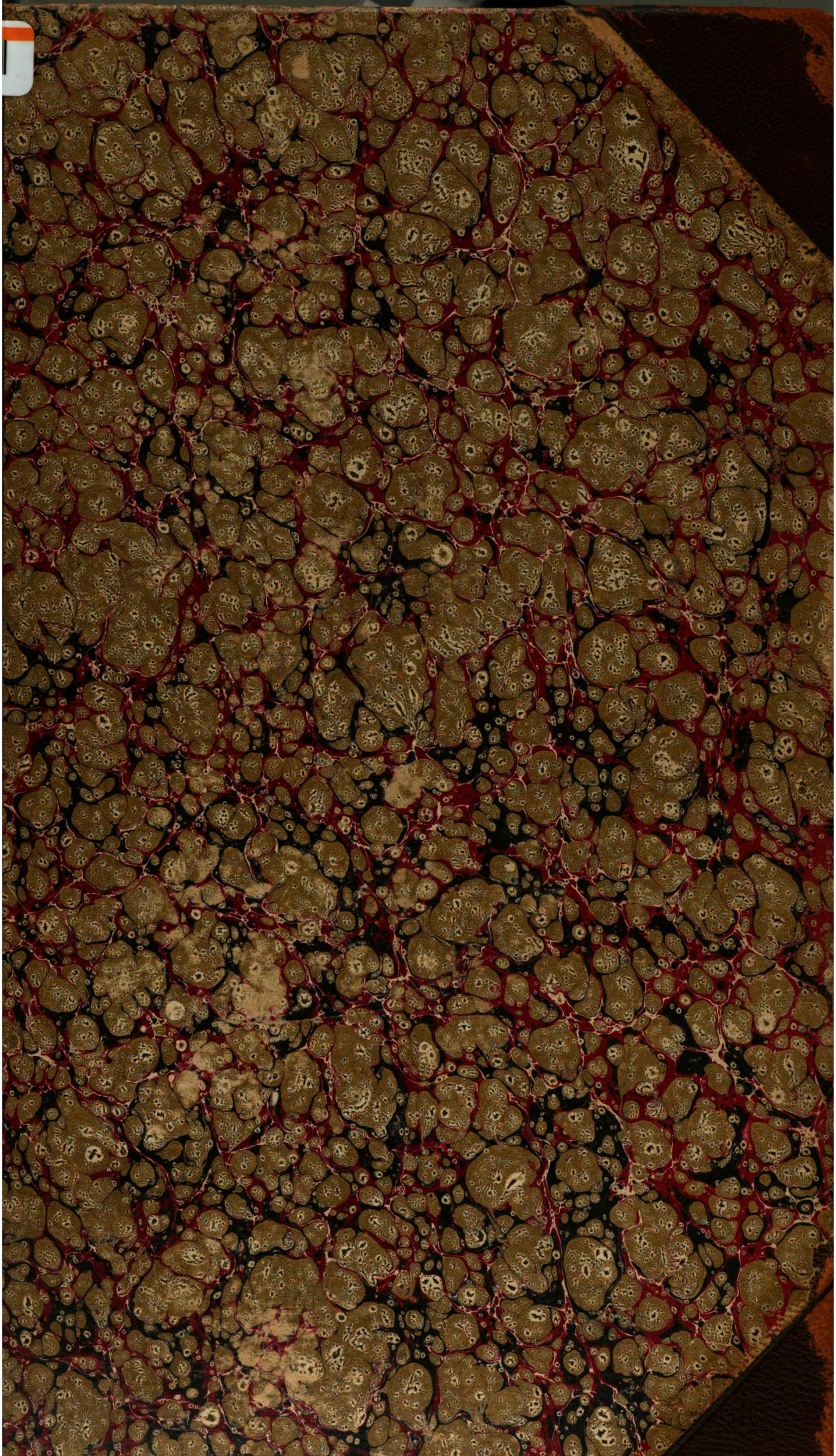

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THE new Federal Building for Baltimore is the subject of a competition, the programme for which, as for all competitions for Government work under the present law, has been arranged by the Government officials. It is hardly necessary to say that amateurs are apt to utilize such opportunities to introduce novelties of their own invention, and one of the suggestions made in the Baltimore programme was that the successful competitor should pay out of his own pocket a "consolation prize" of five hundred dollars to each of his unsuccessful rivals. The Government officials say that this was not included in the programme as a condition, but only as a suggestion, and that they were led to propose it by the reflection that, as the law does not permit the award of secondary prizes in Government competitions, and as the successful competitor would save some of the cost of duplicating plans and specifications, which the Government would do for him, it would promote "the interest of abstract justice, and of good feeling among the competitors," to have him share his profits among his brethren. It is said, not greatly to the credit, as it seems to us, of the ten competitors, that all of them acceded to this suggestion, but the profession generally took a different view of this ingenious method of producing "harmony" among the invited competitors, and Messrs. Post, McKim, Carrère and Cook, who were invited to act upon the jury of award, declined to serve, on the ground that the competition was unprofessional and unsatisfactory. Four others, of more obliging disposition, were therefore selected, and it appears that the competition will be carried out according to the original scheme.

WE hope that the profession and the public will not fail to note this case as a warning of the abuses which will surely creep in under the well-intended, but loosely drawn, Tarsney Act. As we have often said, from the time that the Government first takes steps to secure land for a public building, until the last workman leaves it, the politicians never cease to hover around it, and to use all the means that they can think of, fair or foul, generally, however, the latter, to extract from the undertaking some political or pecuniary advantage for themselves or their adherents. The Tarsney Act was a long step in the right direction, for it tried to put the Government work into the hands of men not subject to political influences, and accustomed to the skilful, honest and economical management of building operations, in the interest solely of the owner. It seemed as if this would at last enable the public to get its building work done in the way that private individuals get theirs done, without being robbed of millions every year to "placate" influential contractors, or dealers in materials; but the event shows that the Tarsney Act is insufficient. As every architect who has had much to do with public buildings knows, the first move of the politicians who find that an honest professional man is likely to be put in charge of the work is generally to disgust all decent architects in advance by the terms of a competition programme, or, if there is no opportunity for this, and they find an honest man installed in spite of them, to goad him by various arts into resigning, and leaving the field clear for their protégé. The new "suggestion" in the Baltimore programme is precisely the sort of preliminary manœuvre which is needed to drag down the public-building service to the old level by keeping out of it the highly-trained and respectable architects whom it was the object of the Tarsney Act to attract. The fact that the competitors were at liberty to reject it, but did not do so, says very little in its favor, and those who agreed to it in this instance, in the surprise of the moment, and perhaps, in the excitement of being selected to compete, would not be likely to do so again, especially after similar experiments, by repelling the best architects, had made selection for Government competitions a very doubtful honor; so that there is no reason why the whole profession, including the present competitors, should not stand together to resist henceforth this and all similar devices. In no other way can the public-building work be kept at the high plane to which it seemed to have been raised, and the whole community should help the architects to insist on what was virtually promised them by Congress; that is, simply, the same treatment in public work that they receive from private owners.

THE plan which was suggested some time ago, for connecting Copley Square, in Boston, with South Boston, by means of a wide street carried southeasterly to join what is known as the Broadway Extension, has been brought forward again by the Boston *Herald*, which urges, with more force than ever, that such a street would be already very useful, and will soon be very necessary, not only to afford direct communication between Copley Square and South Boston, including the northern part of Dorchester, but to relieve the congestion of electric-cars on Boylston Street. In, or very near, Copley Square are already situated the Public Library, the Mechanics' Charitable Building, the Museum of Fine-Arts, the Institute of Technology, the Harvard Medical School, the two great uptown railway-stations, eight or nine hotels, the Girls' Latin School, two or three clubs, a branch post-office, and a number of buildings containing private schools, which are attended by hundreds of pupils. At present, there is no direct thoroughfare by which this great centre can be reached, not only from South Boston, but from a large portion of the city itself, without circumnavigating a series of angles, through the narrow and crooked streets for which Boston is famous. Before many months, the new Music Hall, the new Horticultural Hall, the new Museum of Fine-Arts, and, in all probability, the new Normal School, two or three new hotels, and a great number of first-class shops, will draw thousands of visitors over the same route beyond Copley Square. Moreover, a large part of the thousands of persons who will crowd the Huntington Avenue stores, the Music Hall and the Mechanics' Charitable Building will come from the suburban districts on the line of the former Old Colony Railroad. At present, these people, to reach their trains at the Terminal Station, must walk a long distance from the Park-Street Subway Station, which is now so crowded with people who wish to go there that it is highly desirable to avoid crowding it still more with people who would prefer to go somewhere else. Even without the attractions in process of construction beyond, the travel between Copley Square and the Terminal Station is already so great that the street-railway company has petitioned for leave to lay tracks in the narrow and circuitous streets connecting the two, not only for the convenience of travellers, but to relieve the Subway stations of traffic which need not, and should not, go through them. To lay tracks in narrow streets, while it may answer the purpose of a railway company, practically deprives every one else of the use of the streets so appropriated, and the only rational way in which the acknowledged need of railway communication can be reconciled with public convenience is to provide a street wide enough both for the public and the railway.

ANOTHER project which, if it is carried into effect, will make the need of some such street as is proposed still more imperative, is the proposed purchase by the city of Boston of the abandoned Providence Railroad lands for the erection of an immense market, in connection, perhaps, with other public buildings. A market is, of all public or private mercantile establishments, that which should be most easily accessible to the greatest number of people; and the sight of strings of country wagons entangled in the convolutions of Piedmont and Church and Isabella Streets, in the endeavor of their drivers to get their load to market before their customers had departed, would, in itself, form a strong argument in favor of the new street, which would lead straight to the market from the only important quarter of the city which has not already a tolerably direct approach to it. No doubt it is unfortunate that the new street should not have been determined upon before the construction of the Westminster Chambers building, which stands directly in its way; but delays are necessarily costly in matters of municipal improvement, and it would be far less expensive to build the street now, even including the destruction of Westminster Chambers, than it will be later, when the Providence Railroad land, now vacant, is covered with fine buildings.

THE British Fire-prevention Committee has been making, at its testing station in London, some extremely valuable experiments on floors, partitions, windows and doors, to determine the resistance of various materials to fire. To test floors and ceilings, a room, ten feet square, was built of brick, and covered with flooring of the kind to be tested, and fire applied underneath. The temperature to which each floor was exposed was approximately determined, and, toward the end of each test, water was thrown from beneath on a portion of the floor. Up to the time of the last report, no wooden flooring of the kind that American architects would call "slow-burning" had been tested, nor any form of terra-cotta flat arching. In regard to the latter, as fireproof flooring materials are generally manufactured by certain firms, sometimes under patents, it is fair to the manufacturers to allow them to build the floors to be tested, and, until now, no maker of terra-cotta flooring material has offered to submit his product to tests, while several patentees of concrete flooring have done so. Among these, the Columbian Fireproofing Company seems to have gained the most credit, its flooring of twelve-inch steel girders, surrounded by clinker concrete, with a filling of two-inch steel bars, supporting concrete four inches thick, with plaster ceiling underneath, and concrete filling, two inches thick, on top, between the sleepers for wood flooring, loaded with one hundred and sixty-eight pounds per square foot, having resisted a temperature of 2,300° Fahrenheit for two hours and a half, without injury, except for some cracks in the concrete girder-protection, and the scaling of portions of the plaster ceiling on the application of water. This excellent showing, of which American architects and engineers may justly be proud, was nearly equalled by a floor provided by the Expanded Metal Company, made with six-inch steel joists, with a three-inch concrete slab above, formed on expanded metal netting, and a similar ceiling underneath. This construction, under a load of one hundred and forty pounds per square foot, resisted for seventy-five minutes a temperature of 2,100° Fahrenheit, without injury except for cracks in the concrete, and the falling of some plaster from the ceiling on the application of water; but it deflected slightly, which, considering the dimensions of the steel beams, is not surprising.

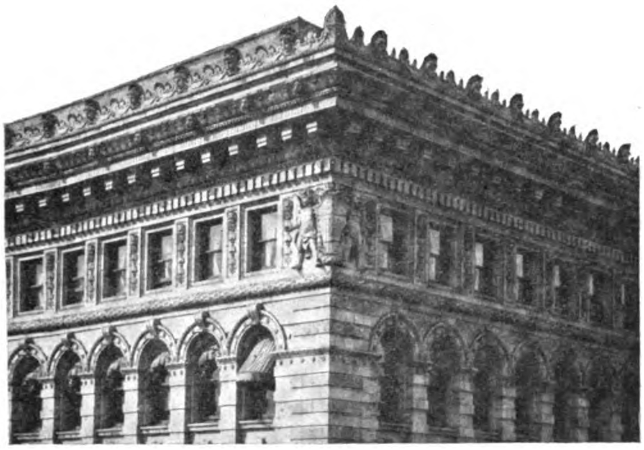
THREE floors, which were built in accordance with the specifications of the London Building Act, gave just the results which architects in this country would expect from them. One was constructed with wooden joists, three by nine inches, filled in with concrete, and with a plaster ceiling. This floor, which was not loaded, was subjected to a temperature of 2,350 degrees for ninety minutes, when it collapsed, the joists having been burned through, the ceiling destroyed, and the concrete partially disintegrated. The second floor was of five-inch steel-beams, thirty inches from centres, filled in with "breeze" concrete, without any plastered ceiling. This was loaded with one hundred and sixty-eight pounds per square foot, and exposed to a temperature of only 1,650 degrees. In ninety minutes, after "serious deflection," it collapsed. The third floor was made with seven-inch steel beams, with concrete arches between them, on corrugated-iron centring, and with a suspended plaster ceiling on wire lathing. This construction, which was common in this country twenty-five years ago, "deflected seriously" under a temperature of 2,100 degrees, and the suspended ceiling fell off, while the concrete arches, at the end of seventy-five minutes, were "slightly disintegrated." In regard to the resistance of glass, some valuable facts were learned. Besides ordinary sashes, glazed with thirty-two-ounce glass, sashes filled with lead-lights and with plate-glass were tested, and also sheets of wire glass, and of electro-glazed Luxfer lights. The sheet-glass and the lead-lights resisted a temperature of 1,000° Fahrenheit, without water, for six and seven minutes respectively, and the plate-glass, one-quarter inch thick, resisted for twelve minutes. The Luxfer lights and the wire-glass, both of which were one-quarter inch thick, and set in wooden sashes, instead of the iron frames which would be used for them in this country, were exposed to a temperature of 1,600 degrees, and had water thrown on them once or twice during the test; but both held back the fire for half an hour or more, although in one instance the electro-glazing began to melt before the test was completed. Sixteen tests were made of these varieties of glazing, both in vertical sashes and in skylights, and, although the wire-glass showed a slight average superiority, the best single display of resistance was shown by a Luxfer sash, which kept back the fire for forty-five minutes, although water was twice thrown on it, and the temperature was 1,600 degrees. We need hardly point out the importance of these tests of glass, which confirm the opinion which architects in this country had already formed of the value of both the new glazing materials. A glazing which will resist the flames for half an hour or more is practically fireproof, and windows filled with it are as secure as ordinary windows with iron shutters.

THE Massachusetts State Board of Health is noted for the care with which its investigations are made, and its account of the investigation of a typhoid-fever epidemic at one of the State institutions deserves serious attention. It seems that a large number of cases of typhoid fever appeared last September in the State Hospital for the Insane, at Northampton. Among the patients, the disease was confined to the "pay patients," while the nurses and the house and farm servants also suffered. Comparing the diet of these with the pauper patients, who were not affected, it appeared that, while the latter were confined to a fixed regimen, the others were favored with little luxuries, such as fresh fruit and vegetables. Among the vegetables thus furnished in the pay wards at the time of the epidemic was celery, grown on the hospital farm, portions of which are utilized for the disposal by downward filtration of the hospital sewage. Investigation showed that the filter-beds were near the celery patch, and that the material from the beds was banked up around the stalks of the celery, to bleach them. Although filtration and exposure to the air soon destroy the germs of typhoid fever, it seemed not impossible that soil freshly charged with such germs, if thrown up around celery, and thus to a certain extent protected from the action of the air, might leave living germs on the surface of the celery. Orders were therefore given to discontinue the use of the celery, and the number of cases of typhoid began to diminish at once, and in two months the epidemic had disappeared.

AS this is, we believe, the first authenticated case in which any bacterial disease has been traced to the use of vegetables from a sewage-farm, and as millions, perhaps, of people depend upon such vegetables for their daily nourishment, the connection of the typhoid infection with the filter-beds should be clearly shown, with all its attendant circumstances, in order that suitable precautions may be taken wherever sewage-farming is carried on. The days have long gone by when a professor — evidently not a professor of botany — could gravely announce in a lecture that he had cut open a stalk of celery grown on the irrigated fields of Gennevilliers, and had seen sewage issue from the cut surface, and the world, long accustomed to the use of sewage-grown vegetables, will be anxious to know whether there is really any danger in the practice.

AN International Congress of Architects will be held in Paris from July 29 to August 4, 1900. The Governments of various countries will be asked to designate official representatives to the Congress, and, undoubtedly provision will be made for private architects of all nations. The sessions of the Congress will be held in the building specially erected for such purposes in the Exposition grounds. Many American architects will probably be in Europe next year, and they may with advantage remember the opportunity which the Congress will afford for meeting their professional brethren. By request of the English architects interested in the Congress, one of the topics to be considered will be that of cheap dwelling-houses for workingmen; and it is hardly necessary to say that the discussion will deeply interest architects of all countries.

SOME FEATURES OF THE "ELLICOTT SQUARE," BUFFALO.



Detail of Main Cornice: "Ellicott Square," Buffalo, N. Y.

WHEN the Ellicott Square Company acquired the site bounded by Main, Washington, Swan and South Division Streets, at a cost of more than one million dollars, it was apparent that there was a field in Buffalo for a building in which might centre the business life of the city; where the representatives of a multitude of related callings might be brought under one roof, securing to all the benefits of intimate association and the exchange of business courtesies. In the designing of the structure which was subsequently erected, these requirements were kept sharply in mind, and in the building were embodied those features which are most essential to the purpose for which it was intended, namely, that of a purely commercial building. There has been little attempt at ornamental display, and no indulging of architectural vagaries, the whole effect of the architectural treatment conveying rather the impression of simplicity and massiveness.

Occupying a whole square in the heart of the business portion of the city, bounded by four principal business thoroughfares and surrounded on all sides by the Municipal and Government buildings, the hotels and depots, the mercantile houses and lesser office-buildings, the Ellicott Square occupies a unique position. The tide of business life ebbs and flows through its broad corridors, while its spacious court, lighted by day by sunlight, and at night by huge electroliers, affords an opportunity for the exchange of greetings during business hours, and for the expression of personal views on the important questions of the time. Here one may feel the pulse of the business life of the city.

Nineteen feet below grade foundations of steel and concrete were established with due regard to the enormous weight they may be called upon to support, the whole structure being designed to admit of ten additional stories, should future conditions justify such a course, thus giving to the present ten-story structure an unusually large factor-of-safety.

The Main and Washington fronts measure each 240 feet, while the depth on Swan and South Division Streets is 200 feet. It was found that the grade at the Washington-Street side is 4 feet lower than the Main-Street grade, and it was decided to give the ground-floor pitch enough to bring the Washington-Street entrance to grade, in order to overcome the disadvantage of a raised entrance on the east side of the building. This has been done with good effect, the depth of the building rendering the depression almost imperceptible.

The style of architecture may be termed Italian Renaissance. To the top of the second floor the exterior walls display a combination of granite, iron and terra-cotta, while above is a veneer of pearl-gray brick with terra-cotta trimmings. The distinguishing features of the exterior are the elaborate main entrances placed in the centre of the Main and Washington Street fronts, and the heavy cornice projecting 5 feet beyond the walls. These features, while quite in keeping with the sober character of the design, lend an air of unobtrusive elegance, and help to give to the *ensemble* a character of dignified repose and massive grandeur.

The building is an example of modern steel-construction at its best. Five thousand, five hundred and fifty tons of steel enter into the construction of the frame. The entire framing of steel and iron is done with standard connections; all beams resting on masonry have strap and pin anchors bolted to the beams. The Gray column is used; columns are made in two-story lengths, alternate columns being joined at each story with vertical splice-plates. The requirements of strength and elasticity were observed in the material used; the steel being required to have an ultimate strength of 60,000 pounds per square inch with an elastic limit of not less than one-half the ultimate strength, an elongation of not less than twenty-five per cent in 8 inches and a reduction of area of not less than forty-five per cent at the point of fracture.

The pearl-gray of the exterior walls produces a pleasant effect. Heading courses of double-brick are used for every sixth course throughout the work, and the backs of all pressed-brick were mopped with a coat of hot Trinidad asphalt, before the backing was built up. The outside of the rubble walls has the joints raked out and the entire surface plastered with two coats of asphalt. Through the rubble walls are laid two thicknesses of pure bitumen damp-course, at a point 5 inches below the top of the finished basement-floor, extending 12 inches under the cement floor of the basement and turned up 6 inches on the outside of the wall.

The building is of fireproof-construction throughout. The fireproofing of columns is accomplished by means of special tiles, secured in place and to each other by means of keys, and to the columns by heavy copper wire; the exterior is also copper-wired, beginning at the bottom and winding diagonally both ways to the ceiling. Fireproof partitions rest on the floor-arches and extend closely to the floor above. Four-inch tiles are used in partitions between offices and corridors and around shafts; in partitions between offices 3-inch tiles are used. The roof-surface is formed of fireproof book-tiles supported on T-irons, and upon the surface of the tiles is laid a six-ply composition roof made up of first quality roofing-felt, pine-tar cement and gravel, in the most approved manner.

The distinguishing feature of the structure is the great central court, 70′ x 110′, open to the air above the second story and roofed over with glass to provide the lower floors with an enclosed social and business exchange large enough for mass-meetings. This feature ensures to all the inner offices the same advantages of light and ventilation which the outer ones enjoy; the court walls have the same color and quality of face-brick and terra-cotta as the outer walls, and the outlook across the spacious court is at all times cheerful and inspiring, animated by glimpses of busy neighbors as they pass the opposite windows.

The interior decorations are in excellent taste. Italian marble is much in evidence in the lower stories, and polished mahogany and handsome designs in ornamental iron give a pleasing effect. The ground-floor is tenanted by merchants and by railroad, express and telegraph companies. Most of the business-places open into the court as well as the street, a manifest advantage to both the occupants and their patrons. The second floor, designated as the banking-floor, has the advantage of spacious rooms, high ceilings and handsome decorations, besides opening on the balcony which surrounds the grand court. The upper floors provide for 600 model offices, besides the spacious quarters of the Ellicott Club, which occupies nearly half of the tenth floor.

The whole height of the building is 144 feet; the first-floor ceiling averages 15 feet; the second story 14 feet; the upper stories 10 feet.

The main entrances are spacious, well-lighted and measure 20 feet from floor to ceiling. The walls are entirely of marble; the ceiling is heavily panelled with the same material. On either side of the entrance broad marble stairways lead to the floor above, while to right and left, behind screens of ornamental iron, are the passenger-elevators. Both Main and Washington Street entrances are alike in every detail, exterior and interior; each has its equipment of eight high-speed elevators, and opens into the court midway of its length.

Completely surrounding the rectangular court, at the level of the second floor, is a broad balcony, approached at either end of the court by grand staircases of ornamental iron with marble treads. The roof-truss which supports the skylight has been made an ornamental feature: the heel of the truss rests at the level of the third floor and the apex is some fifty feet above the ground-floor. The skylight-sash is of light cast-iron glazed with half-inch-thick plate-glass of special design. A white-and-gold effect has been sought throughout the court and corridors of the two lower floors. The walls, ceilings under balcony, architraves, bases, columns, wainscots, stair-spandrels, door and window heads and other surfaces of the court, as well as the walls, ceilings and beams of the first and second story halls, are of Italian marble. Radiators are gilded and the elevator-grilles, staircases and other ornamental iron are flecked with gold; the roof-truss is painted white. To some extent the same color-scheme pervades the main-floor, which is of marble mosaic with very small tesseræ — the blocks measuring half-an-inch square. The prevailing tint is a light orange, relieved by darker shades in the design which forms the border and characterizes the entrances. Suspended from the roof-truss are two gilded electroliers, each carrying five arc-lamps.

Throughout the building the corridor-floors are composed of marble tiles. No corridor is less than 8 feet in width, and all are wainscoted to a height of 5 feet with Italian marble. Barber-shops and toilet-rooms have marble floors and wainscot. A marble fascia extends around elevator-wells on all stories. The stairways leading to the upper stories are placed in bays which project into the open court from opposite sides.

Throughout the upper stories the interior woodwork is of quarter-sawed red-oak, in antique finish. Door jambs and heads throughout the building are of the wood of the room, having moulded stops screwed in place with round-headed screws; all jambs and heads finishing more than eight inches are panelled.

Except where marble or mosaic is specified, floors throughout the building are furred with 2″ x 3″ strips on top of 2″ x 4″ strips set in between beams and set to 12-inch centres. The intervening space is filled flush with rolling-mill cinders. The finished-floor is of first-quality kiln-dried maple. Underneath the marble floors, resting on a fireproof foundation-floor, is placed a concrete deadening composed of cement, sand and broken stone. Floor-tiles are of marble, 12″ x 24″, set in Portland cement.

Minor details of material and construction correspond in quality to the more important ones already described. Exterior hardware is of solid bronze of special design and heavily plated with copper. All ornamental iron in connection with the two main-entrances and candelabra is of duplex electro-bronze of a thickness equal to sixteen-ounce copper. Interior hardware throughout the building is of the finest-quality, bower-barffed.

The distinguishing features of offices, whether single or *en suite*, are accessibility, tasteful and substantial finish, abundant light and excellent ventilation. Each is supplied with a marble washbowl, permanent wardrobe, messenger-call and electric-lights. The walls are hard-finished and the woodwork is put together cabinet-style, showing as few joints as possible. Transoms over the doors are flanked on both sides by auxiliary sashes reaching to the partition walls. Doors opening on the corridors have panels of crystalline-plate, and office-partitions below the level of the door-transoms are glazed with the same material.

The elevator-indicators form a part of the design of the ornamental screens. Mail-chutes and other features of the modern office-building are provided. Floors are designed to carry in addition to their own weight, 100 pounds to the square foot — the Boston standard.

The basement, which includes besides all the space under the building the sidewalk-space on four sides of it as well, not only furnishes a vast space available for storage, but much that is valuable for other purposes as well. Directly underneath the grand court is the large restaurant, handsomely finished and lighted by enclosed arc-lights. The floor is of marble, and the excellent system of ventilation is all that could be desired. "Stattler's" is as familiar a name in Buffalo as "Sherry's" in New York, and it is a common occurrence for a thousand people to enjoy refreshments at the many tables during the noon hour. The bicycle-room, a necessary feature, also occupies a space on the Swan-Street side.

In a building such as the Ellicott Square, nothing requires more careful attention than the design of the mechanical-plant, for upon it depends very largely the comfort and convenience of every occupant of the building.

A glance at the basement-floor plan makes clear the general arrangement of the plant. The boiler capacity is 1,000-horsepower, comprising four Geary steel water-tube boilers. The supply of water for the boilers is obtained from the city mains, purification being effected by the Binks system, inside the boilers.

The advantages of forced-draught have been appreciated and utilized. An 8′ x 8′ horizontal-engine drives a 110-inch steel-plate fan which serves a double purpose. Naturally, the engine-room of a steam-plant becomes overheated and requires ventilation; economy requires that the heat-units be used under the boilers. The fan before-mentioned accomplishes this by exhausting the air at a temperature above one hundred degrees from near the ceiling of the engine and pump rooms, and delivering it in the form of mechanical-draught.

A novel feature of this plant is the automatic regulation of the forced-draught by what is known as the Beckman system, the invention of the present superintendent of the building. Without going into details, this consists of a system of valves, whose action depends directly on the boiler-pressure in such a way that when the boiler-pressure falls below the desired point, the valve on the inlet-pipe to the blower-engine opens and increases the speed of the fan. A pressure-reducing valve controls the draught-pressure to produce the most efficient combustion. By means of a by-pass consisting of a small pipe with a reducing-valve, just steam enough is supplied at a low pressure to keep the fan revolving when, after the steam-pressure has reached the desired point, the direct supply of steam to the blower-engine has been cut off. In operation, the system has proved very satisfactory, a low grade of fuel being consumed without any complaint of the "smoke nuisance." The fuel consists of hard and soft coal screenings in varying proportions, a larger portion of hard coal being introduced when the outside temperature is such as to prescribe slow fires. The limit of variation of the boiler-pressure is found to be only three or four pounds and the cost of fuel per horse-power is reduced to a nominal sum.

On the Washington-Street side a space 70′ x 32′, and extending under the sidewalk, has been set aside as an engine-room. Side by side, along the inner side of the room, are placed the four Ball & Wood engines which furnish power for the dynamos and auxiliary apparatus. Opposite the engines are the two ice-machines of the refrigerating-plant, while at opposite ends of the room are the switch-board and the gauge-board of the high and low pressure systems. The engines are of the horizontal tandem-compound type, and are evidently built for service; three are rated at 160 horsepower, and one at 100-horsepower; they are equipped with a very sensitive governor of the inertia type, and give a practically constant speed under extreme conditions of load.

The dynamos are of the familiar slow-speed multipolar type, direct-connected to the engines, and run at a speed of about two hundred and seventy-five revolutions. Extreme regulation is one of the requirements of the generators for the reason that they supply current to the motor-generators of the Western Union Telegraph Company, whose plant occupies nearly half of the tenth floor. The fixed pressure at the switch-board is about one hundred and thirteen volts.

The system of electrical distribution will be understood if we conceive the building to be divided by vertical planes into four equal sections or quarters, each of which has its centre of distribution on the fifth floor. Four principal feeders carry the current from the main switch-board to the corresponding centres of distribution, whence branches lead the current upward and downward; auxiliary feeders supply the corridor-lights and the motors which operate the ventilating-fans in the attic. Seven thousand incandescent-lights are dispersed throughout the building; in the grand court are ten arc-lights, while in the large dining-room in the basement are as many more.

The average daily load is 1,266 lamps for 24 hours, 365 days in the year. The operation of the plant has been continuous from the opening of the building. The consumption of coal per ampère-hour has been found to be as low as .75 cents.

Sixteen hydraulic passenger-elevators, one of which is specially designed for freight-service, such as the lifting of heavy safes, and four sidewalk-lifts make up the elevator-equipment of the building.

Without dwelling on the steam-pumps in general, it may be of interest to note briefly the fly-wheel pump for the reason that it represents a departure from the recognized practice of the past, and has fulfilled satisfactorily the duties required of it. The elevator-plant is in duplicate; three duplex-pumps on the one hand corresponding to a single fly-wheel pump on the other. The large pump, which was especially designed for this plant by the Snow Steam-pump Works, is a high-duty non-condensing pumping-engine of the cross-compound type and has a high-pressure cylinder 22 inches in diameter, low-pressure cylinder 39 inches in diameter, double-acting plungers 13 inches in diameter, with a common stroke of 24 inches. The steam-cylinders are of the Corliss type and have loose heads in both ends. The steam-pistons are of the Wheelock type, and the valve-gear of the usual Corliss pattern. The cut-off in the low-pressure cylinder is at one-third stroke; that of the high-pressure cylinder may be fixed, or, by means of a special mechanism dependent upon the water-pressure, it may be varied automatically. Repeated tests have shown the advantage of the fly-wheel engine over the duplex-plant in point of economy. One of the duplex-pumps is usually made use of to operate the two elevators, which run all night, while the fly-wheel pump does service during the busy hours of the day.

The successful and economic heating and ventilating of a building such as the Ellicott Square present some problems worthy of the best efforts of the designers; these have, however, been satisfactorily solved.

The ventilation of the building is accomplished by means of an exhaust system, operated by electric-motors. In the attic are seven electrically-driven disc-wheels, each 72 inches in diameter and each designed to exhaust from the corridors and toilet-rooms, 40,000 cubic feet of air per minute, running at 270 revolutions, at an expenditure not to exceed 5 horsepower net on the fan-shaft. There are eight ventilating-shafts, of which four are elevator pipe-shafts, while the space surrounding the stack constitutes one. Special provision is made for ventilating the large dining-room in the basement. This equipment consists of two fans; one, a 90-inch fan, is designed to deliver 10,000 cubic feet of air per minute, running at 300 revolutions and requiring not to exceed 4 horsepower; the other, which is 80 inches in diameter, is designed to exhaust 7,500 cubic feet per minute at 300 revolutions, and requires something like 2½-horse-power. The operation of the system is quite satisfactory; the apparatus was furnished by the American Blower Company, of Detroit.

In designing a heating-system it was desired that the system should not only have the necessary capacity and the highest attainable economy, but also that it should be easily regulated; that it should be elastic, adapting itself to atmospheric changes and the caprices of chilling winds from one quarter or another. Imaginary vertical planes through the centre of the building may again be conceived to divide the building into four sections, in which the heating-system corresponds to the electrical distribution already described.

The entire structure is heated by the exhaust-steam from the engines and pumps without any back-pressure. The exhaust-steam at atmospheric pressure is carried to the attic in 16 and 18 inch mains, whence it is distributed to the four quarters of the building. The arrangement of piping is such that any one of the sections may be cut out without affecting the rest of the system, and again, it is possible to cut out independently any one of the rising lines, of which there are eighty, twenty in each quarter of the building.

In the basement are four exhausters corresponding to the four sections of the building and so arranged that one can be used on each section, or only one or two on the whole system; when occasion requires all four exhausters can be worked on a single section. This flexibility of the system is one of its chief advantages, and under varying conditions results have been entirely satisfactory. The whole circulation is effected at or below atmospheric-pressure with the vacuum at the gauge at 10 or 12 inches. The total heating-surface is some 55,000 feet. The back-pressure valve is in the attic, the main heating and reducing valves in the basement.

The plumbing throughout the building fulfils modern requirements; a feature is the steel-shafts which carry the various pipes so offensive to the eye in many buildings. Hot and cold water are available on every floor. The house-pump in the basement supplies water to the house service-tanks, which are in the attic; these are of ¼-inch iron and supplied with wrought-iron drip-pans.

The combination refrigerating-plant, designed for the building by the Case Refrigerating Machine Company, is located in the basement and effects all the cooling and freezing necessary for the various clubs and cafés. The freezing-agent is anhydrous ammonia.

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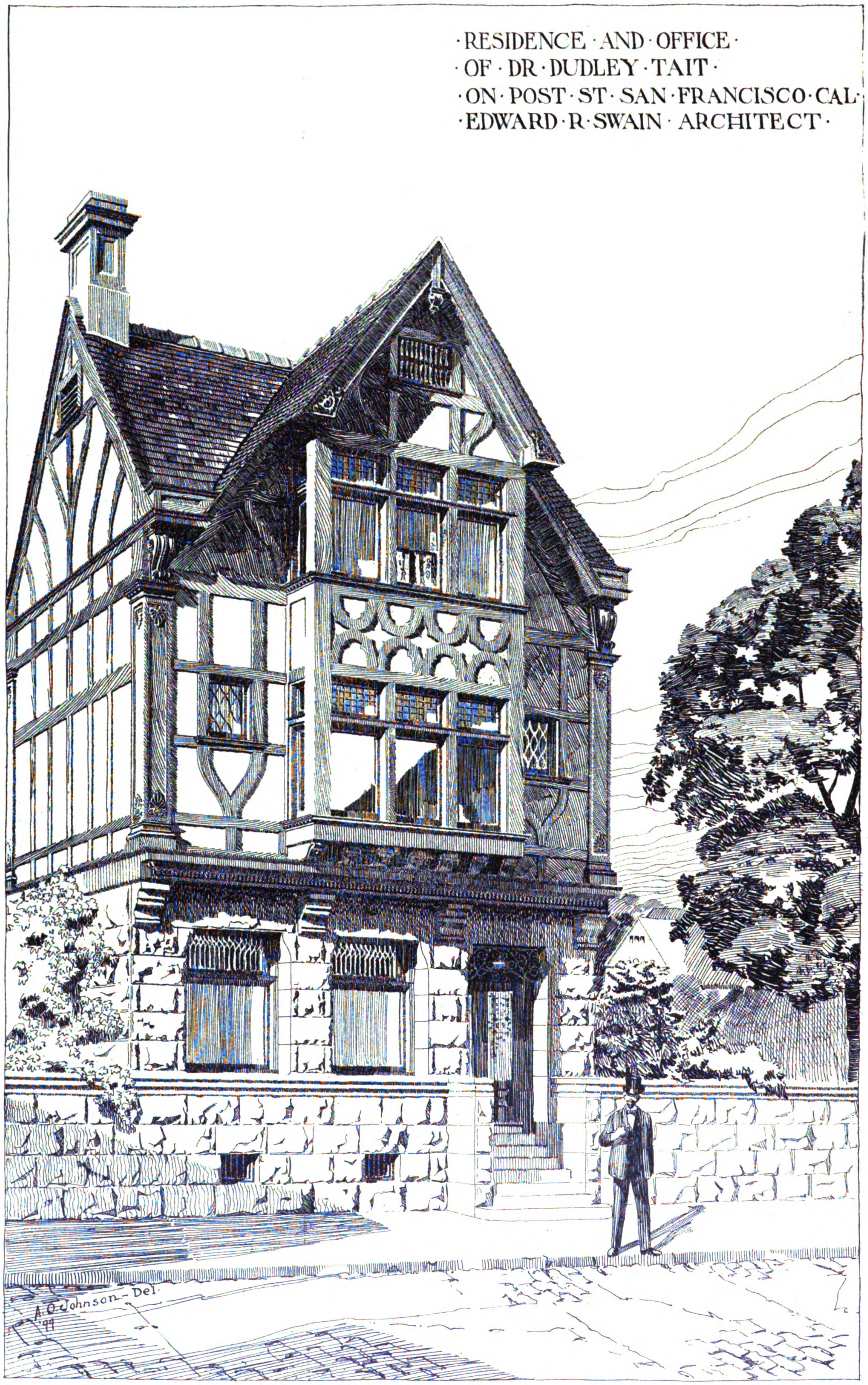

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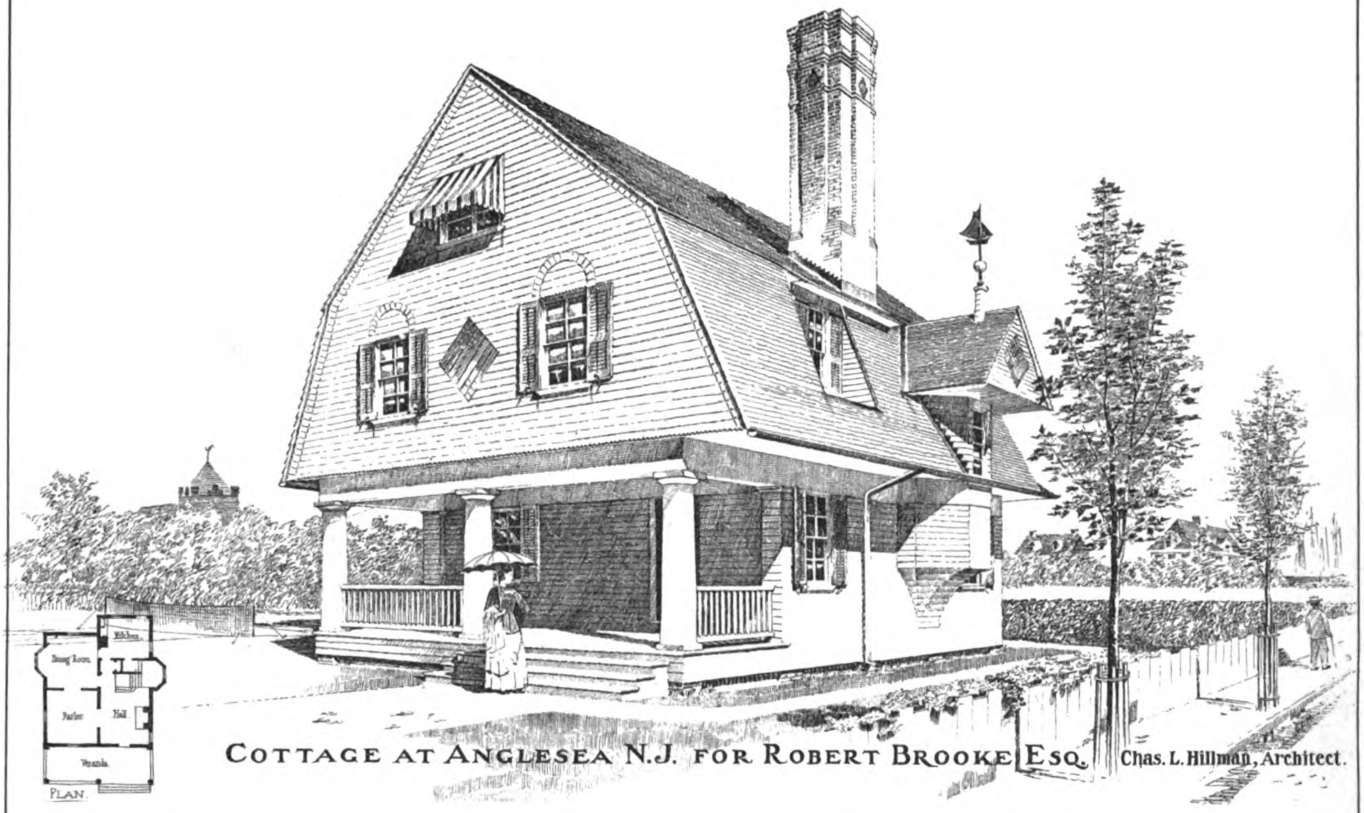

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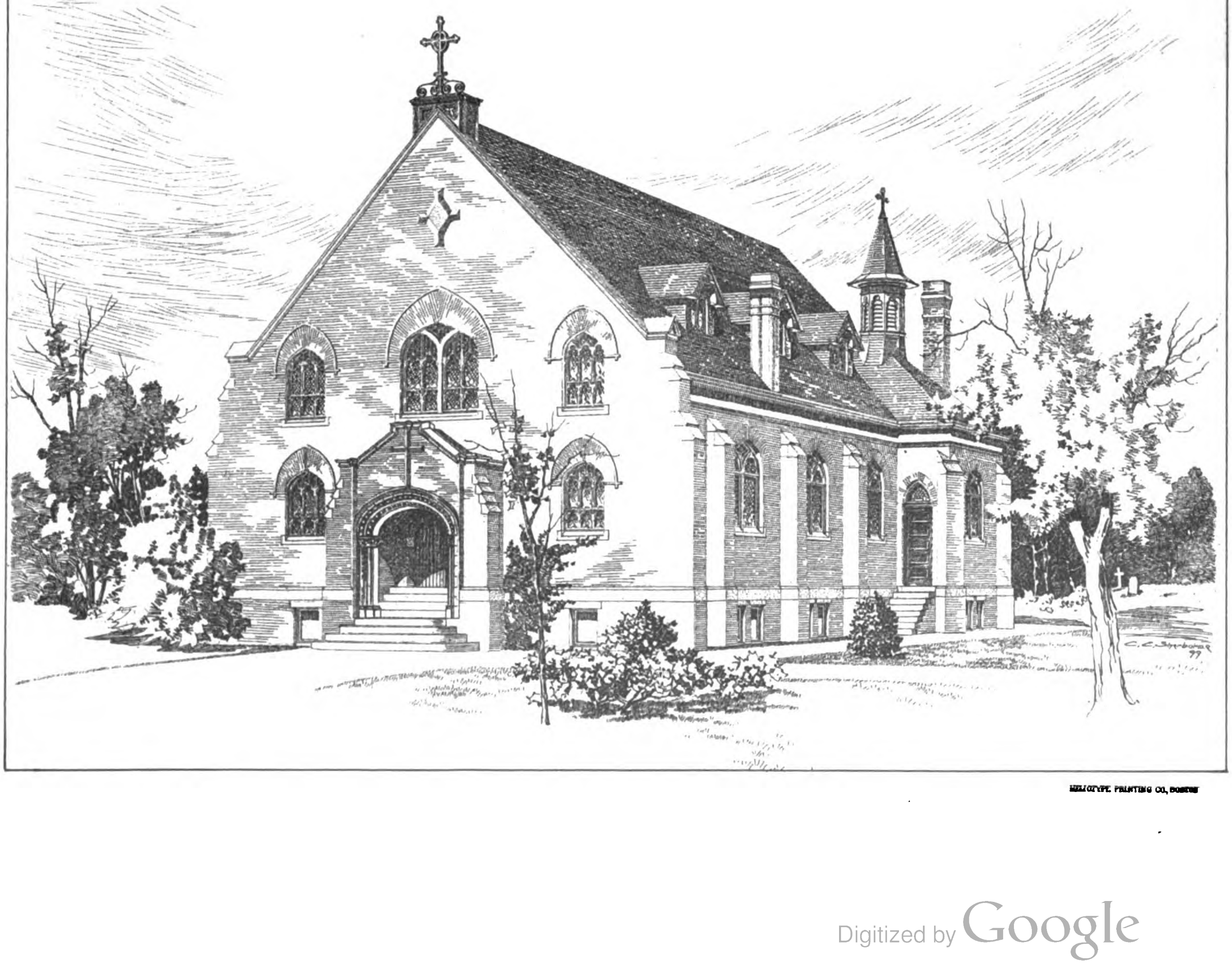

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THE ENTRANCE: "ELLICOTT SQUARE," BUFFALO, N. Y.
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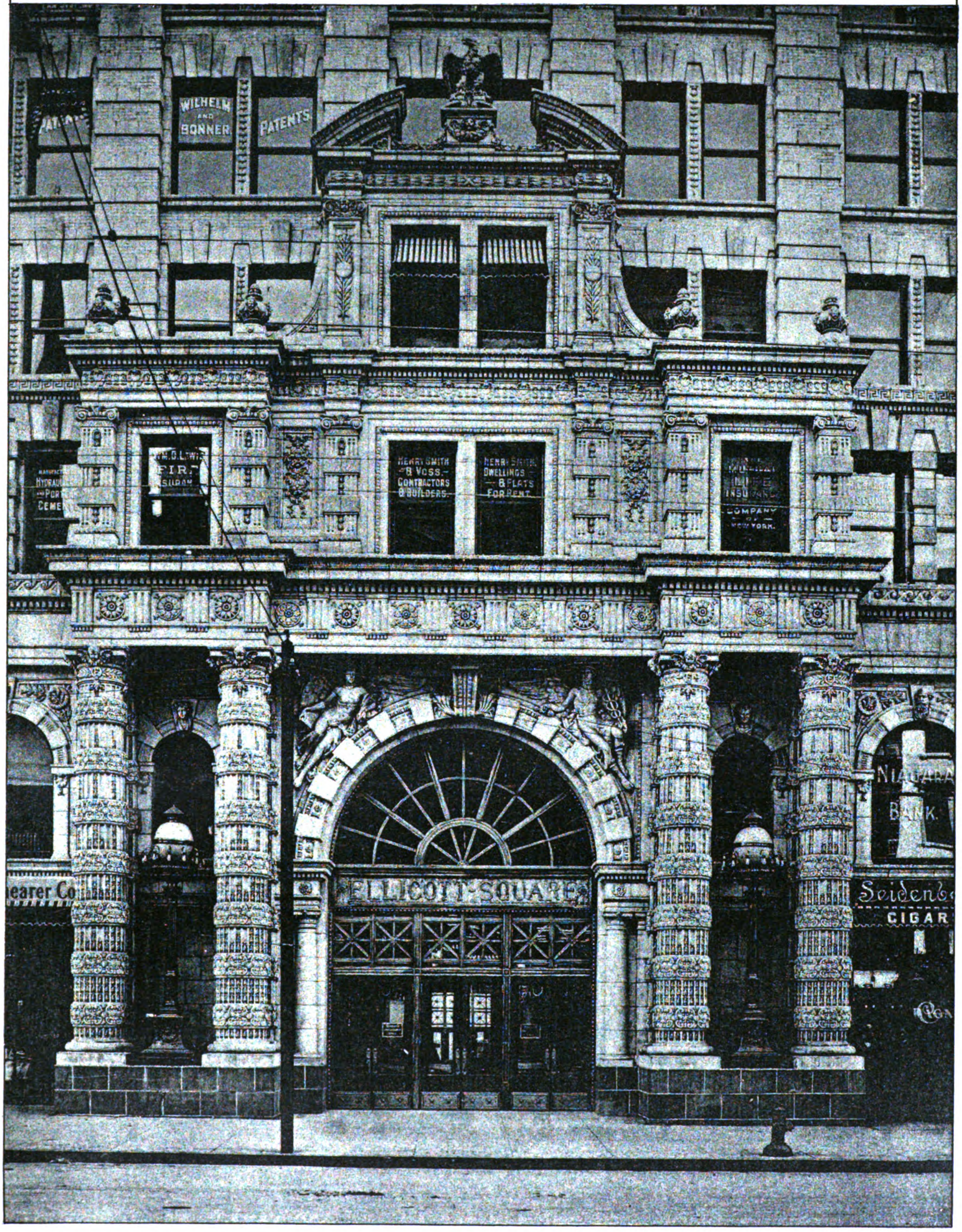

HELIOTYPE PRINTING CO., BOSTON.

AMERICAN ARCHITECT AND BUILDING NEWS, JAN. 6, 1900. No. 1254

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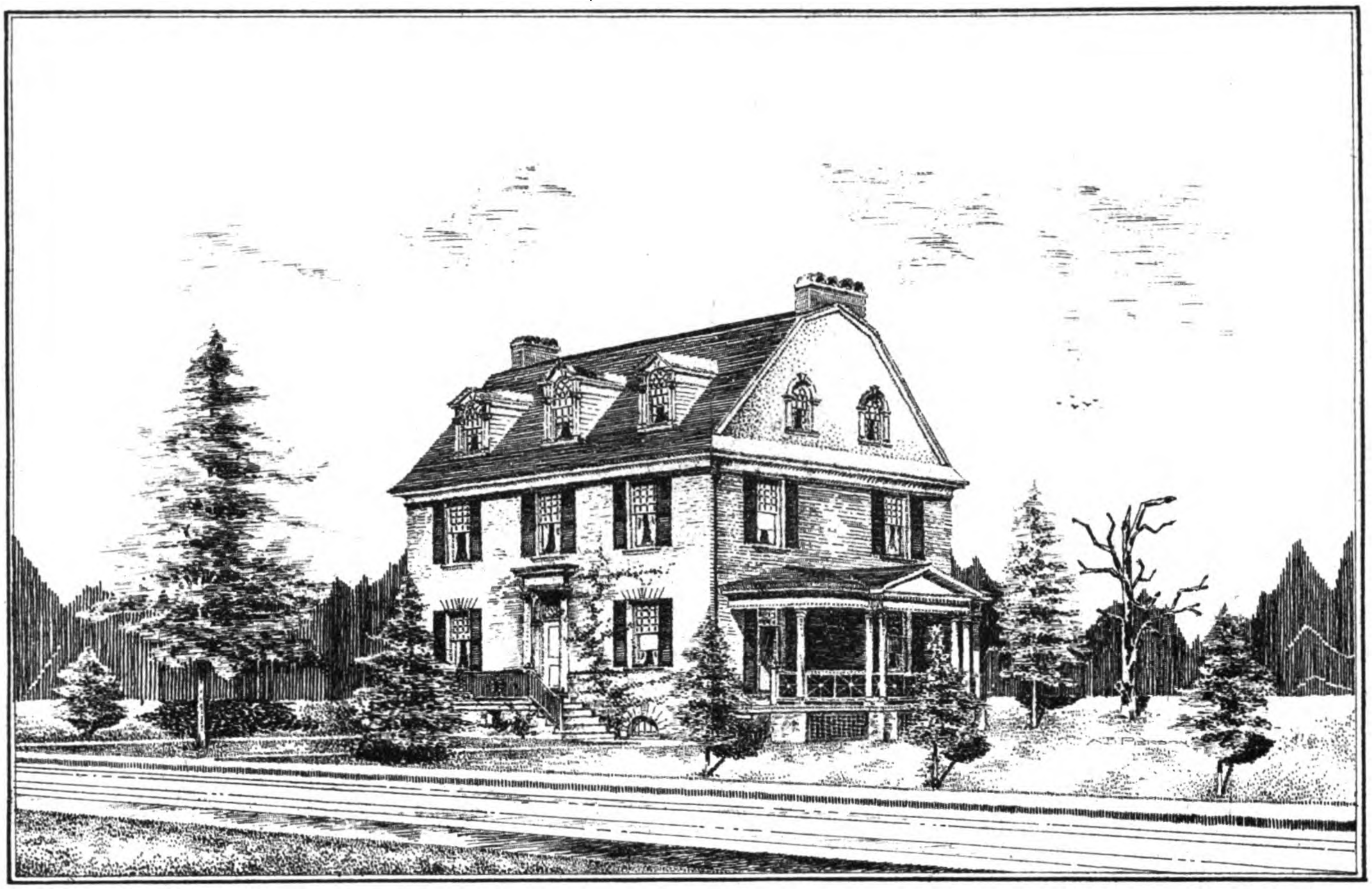
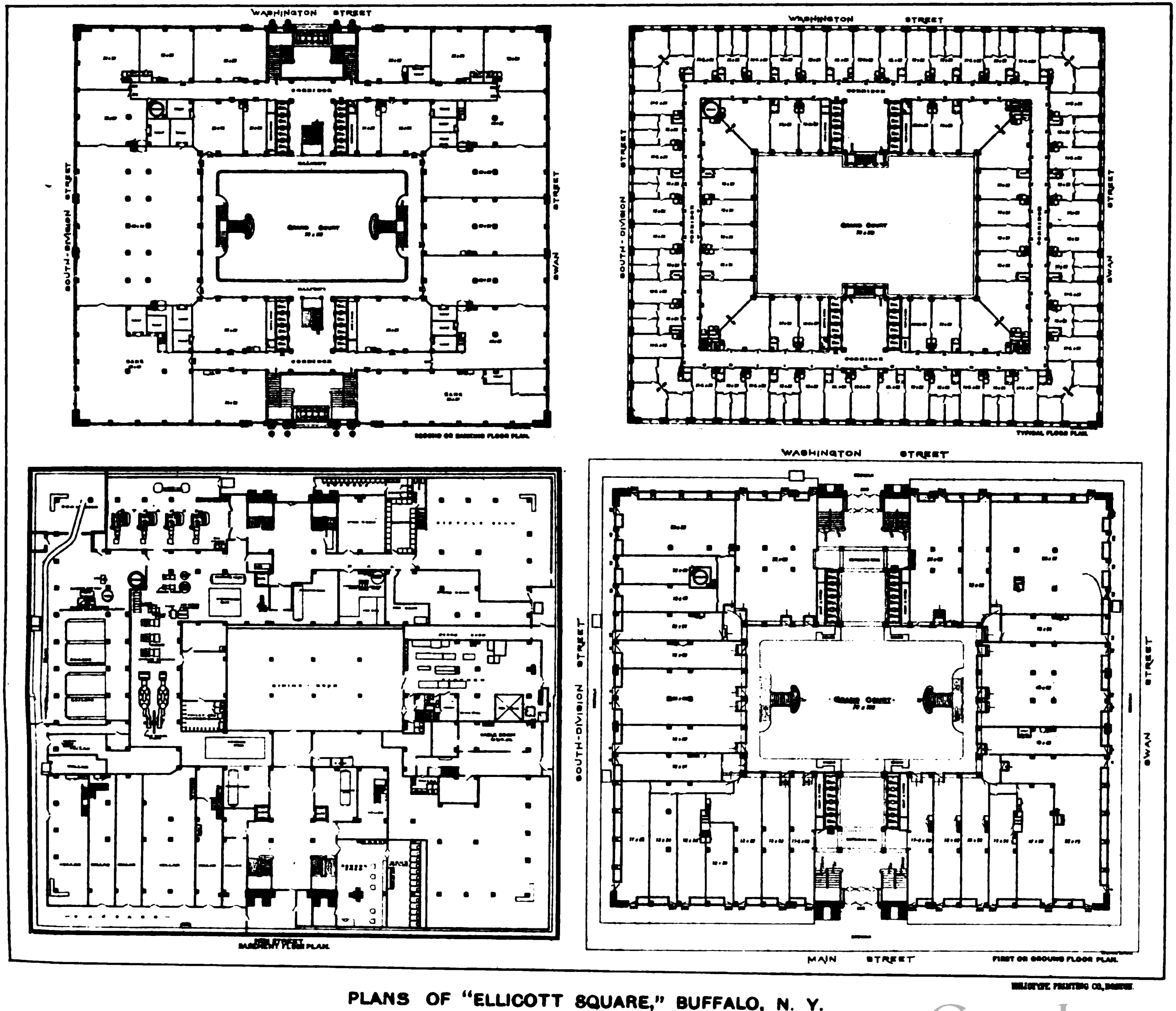


Mr. H. R. Gummey's House, Germantown.

Geo. T. Pearson, Architect, Philada.



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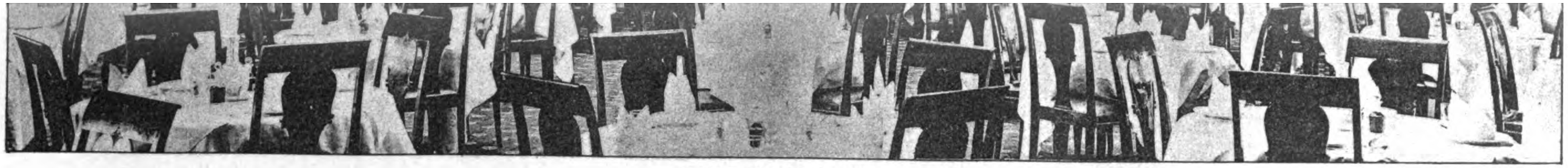
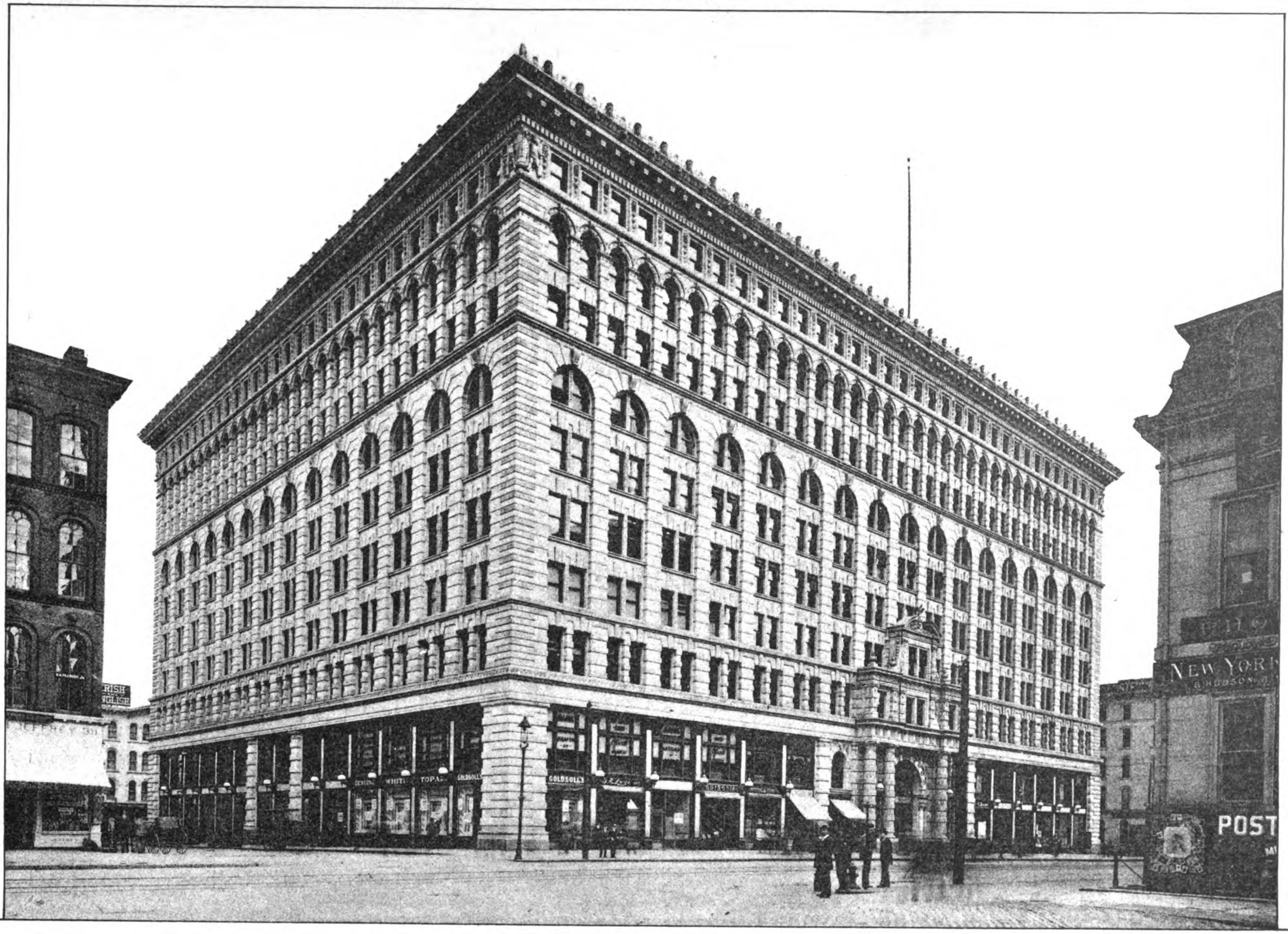
PLANS OF "ELLICOTT SQUARE," BUFFALO, N. Y.



CLUB DINING ROOM.



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"ELLICOTT SQUARE," BUFFALO, N. Y.
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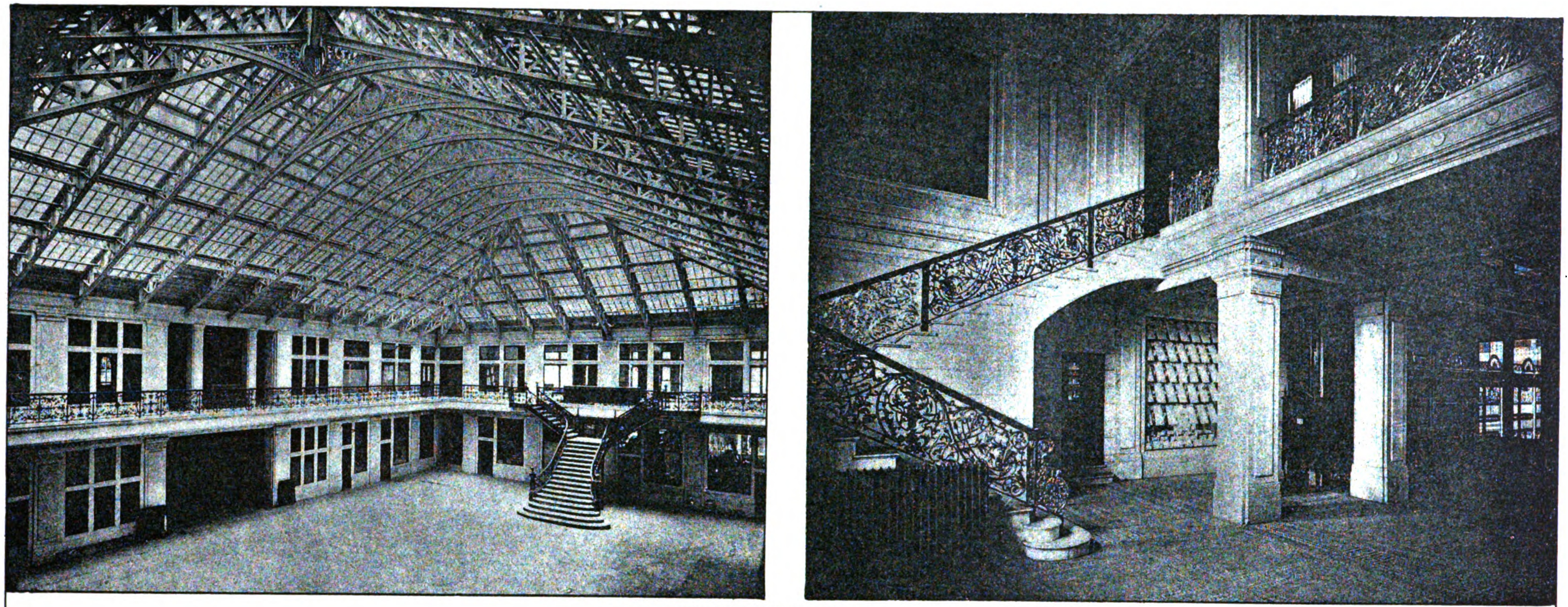
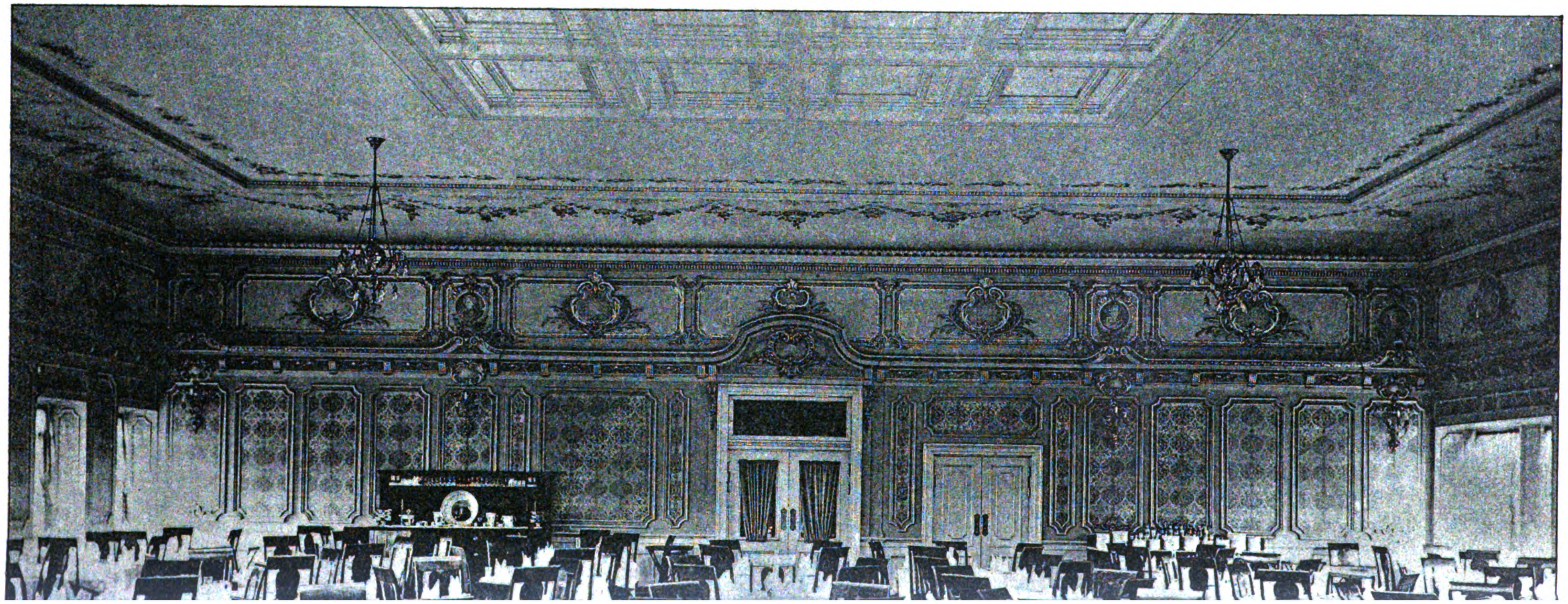


THE CENTRAL COURT.



The two ice-machines each equal the melting of 6 tons of ice per 24 hours. The steam-cylinders are 9¼" x 12", the compressors 6¼" x 12". Besides making some 800 pounds of ice per 24 hours for the Ellicott Club, these machines serve to cool the water for eighteen drinking-fountains, two on each floor above the first. The brine system is used, effecting a circulation from basement to tenth floor and attic, where it serves to cool the fish and game boxes, wine box and other cold-storage equipment of the Ellicott Club. The cooling of the necessary boxes of the first floor and basement cafés and buffet is accomplished by direct expansion.

The mechanical-plant, as a whole, is notable on account of its high economy, as evidenced by carefully-preserved data, made up from daily reports, and because of the smoothness with which the apparatus designed for various purposes works together with the rest of the equipment. The designers are the Jonathan Clart & Sons Company.

It will readily be seen that much depends on the elevator-service in a building of this kind. The arrangement is convenient, eight elevators on each side of the court. Each car has a maximum lifting-capacity of 3,000 pounds with the car 300 pounds underbalanced, and with a load of 1,500 pounds has a speed of 400 feet per minute.

The building is looked upon somewhat in the light of a public enterprise; many of the substantial business-men of the city are interested. It is the property of the Ellicott Square Company, Mr. John N. Scatcherd, President; Mr. Robert W. Day, Secretary. The total cost of the building and site was $3,350,000. The building itself cost about $1,800,000. The time occupied in construction was one year. The architects are D. H. Burnham & Company, of Chicago. F. L. WILSON.

FIRE PREVENTION IN 1899.

EARLIER in the year we already indicated that the fire-losses of Great Britain would probably be found to be very serious for the year 1899, and it could only have been by the good fortune of having a very small number of conflagrations during the later months of the year that our expectations could have been falsified. As a matter of fact, the fire-loss during the last few months has been even more serious than anticipated, and the series of fires which we have had in the Metropolis has been almost unprecedented. In the provinces the same story can be told, and to speak only of one dangerous "risk," that is, places of public entertainment, we have to record no less than four theatre-fires, at St. Helens, at Newcastle, at Cardiff, and at Sheffield, each of which, by itself, would have been an important addition to the list of theatre-fires for any one year.

With this continually increasing fire-loss, not only at home, but abroad, in which many of our insurance-offices, we should remember, are deeply interested, it becomes a matter of importance that the policy of future building-construction should be more definitely framed, and we would congratulate the Royal Institute of British Architects for having set aside an evening this week for the discussion of an emergency paper presented by Mr. Thomas Blashill, lately the architect of the London County Council, entitled, "The Architect in Relation to Fire Prevention." We know of no subject of greater importance for architects at the present moment, and if a subject of this kind is dealt with, as in the present case, by an architect who has not only had long years' experience as a district-surveyor of this Metropolis, but has also held a leading post as far as general building control is concerned, it is a matter of considerable public interest to hear what some of the opinions are that were put forward on such an occasion.

The fire-question is one, as we all know, that does not only concern architects, but also the surveyor, especially the municipal surveyor, and the municipal engineer, to say nothing of that large class of civil engineers, who are directly and indirectly associated with the numerous warehouse-buildings and dock-estates, which we have in every part of the British Isles. This question of fire prevention is one which should have the attention of the whole of the technical professions, and it would have been well if, on an occasion like this, the Royal Institute of British Architects had seen its way to invite the attendance of its sister technical bodies, on the same lines as the members of the junior society, *i. e.*, the Architectural Association, work hand-in-hand with the Institution of Junior Engineers.

Mr. Blashill, in dealing with his subject, laid special stress on the fact that the policy of fire-protection should generally be that described in the old motto, "Prevention is Better than Cure," and, continuing, he laid particular emphasis on the work of the British Fire-Prevention Committee during its present year (the second, we believe, of its existence). This body has created quite a sensation, not only in the technical circles of Great Britain, but also in other countries, by the systematic way in which it has grappled with the subject, and has started at the very kernel by first of all examining the fire-resistance of materials and systems of construction which are at our disposal.

It must also have been flattering to this young society, with its membership of some five hundred architects and engineers, to have heard the laudatory comments of Mr. Cates, the late Crown Surveyor, as to its work. But it must be even more pleasing to know that, according to general opinion, it has, perhaps, done more thoroughly practical work in one short year than many of the older institutions, with their enormous membership and large funds, manage to get through in the same space of time.

We have from time to time referred to the tests of the British Fire-Prevention Committee and the reports they issue, which, if we may say so, have been the leading feature of their work for the current year. We described their testing-station fully soon after its opening, and remarked on the Committee's programme. It would now, perhaps, be quite appropriate to summarize what amount of work has been done at this testing-station to which Mr. Blashill referred, and if we look through the various reports already issued and the appointments for tests, we are, indeed, struck by the number of investigations that have already been in hand.

Between January 26, which was the Committee's first testing-day, and December 13, which was their last during the current year, no less than seven varieties of floors have been tested, most of which had concrete in their composition, and hence required a considerable time for construction. We also find that two different forms of ceiling were examined; and the list goes on to show that five partitions, thirteen different doors, nine casements, seven skylights, as well as quite a number of minor miscellaneous appliances, have been before the Committee during the eleven months we refer to. Quite half of the tests, we are glad to say, were with unpatented materials. or systems of construction, or, in other words, with work that is common property, subject to no monopoly or special interest. The other half of the tests were with patented materials or systems of construction, presented not only by English firms, but by firms of American, German and French origin. All the reports on these tests, it is true, have not yet been issued, but the majority have already left the printer's hands, and, speaking generally, they show what care must have been devoted to their compilation; for though we have examined many, we have not yet discovered any expression of opinion or any unpractical detail, whilst in illustration they show everything we can desire to have before us when judging the results of a test.

If anything is missing, however, it is an analysis of the year's results, but we understand that such an analysis will only be issued at a later date, perhaps during the coming year, when the total number of tests is yet greater, and certain series — such as those on doors or different forms of glazing — have been completed. Such an analysis, when the time comes, will practically give a key to the question of fire-prevention, and the material or system of construction that is not to be found in this key may then be taken to be outside the pale of practical use, as far as the architect and engineer are concerned, for, by that time, it will be a bold architect or engineer, indeed, who will venture to specify work that has not been under the Committee's observation. Even to-day, at this early stage, we know of many architects and engineers who are bluntly refusing to specify anything but work that has been under the Committee's tests, and this, after but a short year's working of the Committee, speaks volumes for the effect their labors are already having on the building-trade of the Metropolis and the provinces. At a time when the layman owner of property ridicules the fireproof building as a delusion and a snare, and, even yet more, ridicules the so-called fire-resisting construction sanctioned by the Building Act or favored by the fire-insurance companies, the architect and engineers must lean on something before they order work of a fire-resisting description. And they have apparently come to the conclusion that it is better to lean on facts presented by a committee without any opinion, than on the highly-flavored testimonials and self-laudation of the typical fireproofer.

It is this turn in events, we think, that has suddenly brought about the increasing use of the various forms of concrete floors, as distinct from the terra-cotta floors, none of the terra-cotta makers having presented their work for tests up to the present moment. It is probably for the same reason that we suddenly find an enormous demand for protected window-openings and skylights, with improved forms of glazing; and also, the increasing demand for slag-wool or silicate-cotton as a protective material for ceilings and light partitions. Architects especially are beginning to see through the so-called "exhibition" tests with their luncheons, the advertisements where legal opinions on patent questions are quoted, or other similar inappropriate reference is given with a view of proving (?) "fireproof" qualities. Many architects have already been through the unpleasant experience of seeing their so-called "fireproof" buildings gutted, having, perhaps, relied entirely for their specifications on hearsay and advertisements; but experience teaches.

Mr. Blashill was quite right when he emphatically indicated that "exhibition" tests and these various forms of testimonials were generally not worth the paper they were written on, and that the architect should be grateful that means were at last afforded him to find out the truth regarding fire-resistance for himself. The great difficulty, of course, in dealing with the various forms of patented methods of construction and material in the market, is that those engaged in the exploitation are too frequently not aware of the exact purpose of the invention they are pushing. Some method of construction which is designed for a specific purpose, and may fulfil that purpose exceedingly well, may be quite out of place when applied in a different manner.

If we glance through the tests of the British Fire-Prevention Committee, it will easily be seen how the armored wooden door by itself — by American experience better than the iron door — proves a failure if it is not hung well, built well, and fitted well. The idea is good, the door itself may be good, but the application may be entirely unsuitable, and the result is a failure. We have also electro-glazed prisms by the Luxfer Prism Company used in casements standing vertically, and the result is excellent. When placed in a horizontal position for use in skylights, the result, however, is a fiasco, for this form of glazing has apparently never been designed for horizontal application.

Further, the slag-wool partition may be tried and shows itself in the best possible manner where it has been properly put together, but at one spot the construction has not been up to the average, and the fire immediately breaks through at that particular point. Again, a material may be excellent for the resistance of fire, but absolutely unsuited to withstand the application of water, and yet the maker comes forward for the combined test and ignominiously fails. Finally, we find a number of floors, each of which may be excellent in fulfilling its specific purpose, either as a light floor or a heavy floor, but the moment such a structure is used for a different purpose from that for which it is intended, the practical results are unsatisfactory.

It is difficult to find out how it comes that so many blunders are still being made in the fireproofing trade, and we can only explain it by the fact that inventors are frequently the most unpractical of men, and the commercial men to whom they sell their patents for exploitation are not in touch with technical requirements; in other words, that technical advice is lacking, which is essential for practical exploitation. We may be mistaken, but we believe this accounts for much.

It is just on account of the above failures that we would advise the Committee to particularly emphasise in their reports the application to which the material or system of construction was put. For instance, we should have preferred to see the title of a special glazing as "Three Vertical Casements," instead of "Three Casements," and "Five Horizontal Skylights," instead of "Five Skylights," although it is, perhaps, generally understood that casements are approximately vertical and skylights approximately horizontal. The load to which a floor is subjected is generally put in the form of a "note," but the load is an important factor, and should have a more prominent position in the object of a test. The name and description of the doors tested are given, and if we examine the "notes" in the "object of test" we find how the doors in question were hung. Surely it is of the utmost importance to know immediately from the title of the test whether the door was hung to open inwards into the fire or outwards away from the fire. We do not wish to be too critical on small details of this kind, as far as the Committee are concerned, but we think that for the purpose of trade, or of straightforward trade, it would be better for the manufacturer to say: "My glazing stood so much in a vertical position, but only so much when in a horizontal position." He should also have a report that, at a glance, clearly shows the application of the material under investigation.

But leaving small matters of detail, we think it might be of use to fill up temporarily that gap in the work of the British Fire-Prevention Committee which must exist until a full analysis is available; in other words, we should like to give a small analysis ourselves of the report presented. We will leave the door question for the moment, as the reports issued to date do not cover the subject sufficiently to enable us to get a clear picture of it, but we think the various forms of concrete floors which have been under investigation would serve as a basis for a short analysis of this kind. We find, first, a floor of 9" x 3" wood-joists with concrete filling, with boarding above and a plaster ceiling below. Next we find a floor of steel-girders 5 inches high with 5 inches of coke-breeze concrete filling with neither flooring above nor a ceiling below. Next comes a similar 7-inch floor where the concrete is on corrugated-iron centring and where the ceiling is suspended below on small wood-joists, the lathing being wire-lathing. Then we see a girder and concrete floor by the Expanded-Metal Company, where the centring is of expanded metal and a suspended ceiling of expanded metal has been hung from metal fastenings, the expanded metal being plastered in the ordinary way. Another concrete floor under investigation was by the Columbian Fireproofing Company, comprising a system of girders, steel-bars and concrete, put together in a special way.

The results of these concrete-floor tests are highly instructive. First, the wood-joists and concrete floor collapsed after a test of one hour and a half, the highest temperature reached being 2300 deg. Fahr. Then the floor of steel-girders and concrete, without any protection below or boarding above, was found to have collapsed after 1 hour and 27 minutes, the temperature being 1700 deg. Fahr., the deflection of the ironwork during the test having been material. The ordinary girder and concrete floor, with the additional suspended ceiling and corrugated-iron centring, stood a test of 1¼ hours, with a maximum temperature of 2100 deg., with the exception that the suspended ceiling fell, that the concrete slightly disintegrated, and that the floor had deflected materially. Here the load was 168 lb. per square foot, as was also in the case before; on the other hand, the first case dealt with, the wood-joists, no load had been applied.

Turning to the fourth test, where the expanded metal was used, we again have a test of 1¼ hours, a maximum temperature of 2100 deg., and a load of 140 lb. per square foot, and we find, as a result, that the suspended ceiling stood until water was applied, and that, with this exception, the floor remained practically uninjured.

Lastly comes the result of the Columbian Fireproof Company's test, which had 2½ hours' duration, with a maximum temperature of 2300 deg., and a load of 168 lb. per sq. foot, and which, with the exception of a few slight cracks, came out practically uninjured. In each case the superficial area of the floor was 10 ft. by 10 ft., and the conditions were practically identical.

This short analysis of five concrete tests, briefly given without tables or details, already presents a very good picture of what the Fire-Prevention Committee does. The first two floors mentioned were floors which would have been passed by any district-surveyor as complying with the Building Act, and which were both better than the minimum requirements of that Act. They were, however, both failures, for light floors of this description should at least resist fire for 1½ hours, and they certainly did not do this. The third floor was a Building-Act floor with the extra luxury of a suspended ceiling, and we find that the suspended ceiling, though destroyed, protected the floor for a considerable time.

Next, the same kind of floor with the application of patented materials is seen to stand its test very well, the application of water alone affecting the ceiling, but the record so far is beaten by a floor of heavy girders and concrete by the Columbian Fireproofing Company, and we would only now wait to see some further demonstrations in this direction. What we should like to know, however, in the meantime is what the worst form of Building-Act floor that could possibly be passed by a district-surveyor, with wood-joists and 5 in. of coke-breeze concrete, could stand.

But a further practical result of these tests has no doubt been the employment of the Expanded Metal Company's floors and the Columbian Fireproofing Company's floors, as well as those of some of the allied systems, on a far larger scale than the friends of terra-cotta work may have desired. But, of course, if one of the terra-cotta floor companies chooses to try and beat the existing record of 2½ hours, the tables may again be turned, unless a counter-move is made by the concrete-floor makers. We have heard that certain terra-cotta floors have stood 4 hours in the United States, but we should prefer to see such a thing here in London and at the Committee's testing-station, as we have had too much on hearsay of American fireproofing methods, while practical experience at American fires with modern terra-cotta floors does not seem quite so encouraging.

Regarding glass, a similar analysis might be made. We will here only take, as shortly as possible, the vertical casement. None of the ordinary forms of glazing were found to last more than 12 minutes, in fact, 32-oz. glazing was destroyed in 7 minutes, and it was ¼-in. glass-plate alone that stood 12 minutes, the temperature being in each case about 1000° Fahr. On the other hand, electro-glazed Luxfer-prism casements were seen practically to stand ½ hour, with temperatures up to 1500°, with a plentiful application of water from both sides, and an electro-glazed ¼-in.-plate casement even stood longer, close on to ¾ hour, at temperatures up to 1600° Fahr., while Pilkington's wire-glass ran even, or a little to the good, at slightly higher temperatures. It was certainly a very close race between these two forms of casements, and the results are of the greatest interest. As far as the skylights were concerned, what we said above, however, holds good; the Pilkington wire-glass stood better in a horizontal position than in a vertical position, whilst the Luxfer-prism casements, which stood so excellently in a vertical position, failed in a horizontal position. In other words, the honors were entirely with wire-glass as far as skylights were concerned. It seems, perhaps, a little out of place that one should speak of one maker obtaining the lead before another; but, as a matter of fact, with tests of this kind, conducted on identical lines and frequently contemporaneously, it is difficult to avoid a slight sporting element.

But without discussing the matter at great length these particulars will already amply show the nature of the lessons taught and the reasons why so much attention is being paid to the work of the Fire-Prevention Committee, not only in architectural but also in engineering circles. And if we were to summarize the events of the year 1899, as far as fire and fire-protection are concerned, we think we can safely say that this has certainly been one of the worst years for fire-loss experienced for a considerable time; but that, on the other hand, it has been the most notable year in the annals of *fire prevention.* The world has at last obtained a testing-station, where scientific results can be obtained reliably, and where questions of fire-resistance can be dealt with as a science, and not in the haphazard way to which we have been accustomed. This new departure in fire-protection is, we are sure, a matter of congratulation to all concerned, and will doubtless lead to further developments in the same direction. — *Engineering.*

BOOKS AND PAPERS

THE number of sumptuous books upon artistic subjects now being published in London is astounding. A few years ago, we used to remark that there seemed to be no great number of cultivated persons who were rich enough to buy such books as appear frequently in Paris, where one hundred francs or more is not at all an uncommon price. Now all is changed, and Messrs. Bell alone turn out expensive art-books almost daily.

The life of Rossetti[1] is one of these. It is full of excellent reproductions from the artist's pictures, many being photographed for the first time; but, of course, Rossetti loses more by reproduction than most painters, as color, not form, was his forte. One sees, too, the intense conventionality of the painter's type of beauty, the heavy, curved, full lips and thick throat, even more pronounced in photography than in the original pictures. Nature, as Millais said, was certainly not Rossetti's ideal. It is, also, curious that Mr. Marillier, in this book, should repeat the popular error of Rossetti having been the founder and mainspring of the Pre-Raphaelite movement, just at the moment that we are all reading Millais's version of the P. R. B. and his comments thereon. As a matter-of-fact, Rossetti only assimilated the quaintness of the early Italians; the laborious painting of detail studied direct from Nature which was the very essence of the P. R. Bs' creed being totally unsympathetic to the tastes of the artist-poet; and possibly, too, that division of his sympathies between the pen and the brush may have been one cause of his dislike of minutely-painted detail. One has only to compare the flowers growing in the grass in many of his pictures with the nasturtiums in Millais's "Huguenot," to see the difference between a conventional and a realistic treatment of detail.

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[1] "*D. G. Rossetti,*" an illustrated memoir of his art and life, by H. C. Marillier. £5 5s.

The author gives an amusing account of the menagerie which Rossetti kept in his garden at No. 16 Cheyne Walk — owls, puppies, marmots, kangaroos, armadillos, parakeets, as well as a deer, a white mouse, a parrot, a peacock and a host of other creatures; but the pet of pets, immortalized by Dante and Christina in verse, was the wombat. The sister wrote an Italian lyric to the creature — "*Uommibatto, agil, giocondo,*" and the brother an ode of welcome.

> "O how the family affections combat
> Within this heart, and each hour flings a bomb at
> My burning soul! Neither from owl nor from bat
> Can peace be gained until I clasp my wombat."

In the life of Rembrandt,[1] Mr. Malcolm Bell takes us sympathetically through the few happy years of the painter when he quaffed his glass to Saskia, and the miserable ones, when the pictures which are now valued at thousands might have been, and were, bought for an old song. The book is full of illustrations, and the latter part gives an account of the etchings.

Lady Dilke[2] has produced a much needed book, for few people in England know anything about French art of the eighteenth century, with the exception of the works of Watteau, Lancret, Boucher and Greuze. Chardin's exquisite still-life studies, Rigaud's portraits, the charming and refined frivolities of Fragonard, are only known to the few, although last year Messrs. Agnew introduced us to some magnificent examples of the latter painter. Lady Dilke's appreciation of Watteau is naturally great, and that unworthy favorite of the sentimental public, Greuze, is judged fairly and according to his feeble lights.

Mr. Bate's "*Pre-Raphaelite Painters*"[3] includes outside disciples of the P. R. B. as well as its apostles. A large number of illustrations put before us the various works of some forty painters; and the letter-press is full of pertinent remarks. Some of the forgotten painters of the movement are included in Mr. Bate's retrospect; those, the unhappy ones, who failed to attract the public, the critics, or the money-bags. The charm of Mr. Baldry's book[4] is mainly due to the illustrations and the anecdotes, some of which are not new; but although it has appeared at an unfortunate moment (almost simultaneously with the "*Life*" by Mr. J. G. Millais), it will attract the public whose means will not allow them to buy the larger work.

"1812"[5] is the story of the Russian Campaign told in Verestchagin's most brilliant colors. The illustrations reproduced from the large pictures are somewhat disappointing, it being quite impossible to convey the strength of coloring in the original works, by means of any black-and-white process; but the painter's theories upon art, his devotion to Nature, and to Nature only, are profitable and pleasant reading. On the other hand, few or none of Napoleon's admirers will be inclined to increase their admiration for him after reading this dismal history, and gazing at the artist's most graphic pictures; for Verestchagin, being a supreme realist, glosses over no horrors, either in print or on canvas. He could never be accused of painting war in rose madder — and rightly; for if it must be painted, by all means do it in all its ghastly horror. Verestchagin's object in delineating war from the side of the soldier rather than from that of the staff officer is to inspire people with a just horror of it; and so he opens his picture-shows to school-children free, in order to instruct them in the way they should not go. Thereupon an anecdote of a London Board School urchin: — The tribe went round the room, the artist instructing the children in the brutalities of war, and of all the special horrors of the Retreat from Moscow — the starvation, the cold and the miserable selfishness of men who were all but mad. Well, how did that boy take the story? "Oh! how jolly to be a soldier and fight!" was his comment on the artist's efforts. We all know Verestchagin as a painter not only of horrors, but of mosques and temples, and of that most wonderful Taj at Agra; as a writer he is much less celebrated. Nevertheless, the vigor of the man shows itself in these descriptions of the subjects of his pictures. Realism is his ideal, but he holds that "the art of representing subjects in a realistic manner does not entitle a person to the name of realist." Artists must take pains to "reproduce the true light under which the events they treat have really taken place." Scenes of battle "under the torrid sun of Africa, should not be painted by the gray light of a European studio. . . . I assert that in cases where there exists but a bare representation of a fact as an event without idea, without generalization, there may possibly be found some qualities of realistic execution, but of realism there would be none; of that intelligent realism, I mean, which is built on observation and on facts — in opposition to idealism, which is founded on impressions and affirmations, established *à priori.*" This is somewhat vague, but the painter means to impress upon us that his local color is as right as his costumes; and that, whether he depicts India during a peaceful pageant, or Russia during the frightful slaughter of battle, he does his work as he saw it, truly and ungarnished, though, maybe, with the power of generalizing, which only is possible to a great and experienced painter. There may be crudeness in his coloring, but there is intense sunlight; and no one can fail to be impressed by such pictures as the "Armed Peasant" standing in a snowed-up wood; "On the Way Home;" "Despair," that fine portrait of Napoleon resting his head on his hands in the agony of the realization of, possibly, a dreaded failure and catastrophe.

The "*Dutch Painters*"[6] is edited by the illustrious Curator of the Plantin Museum at Antwerp, Herr Max Rooses, and in it we find many appreciative notes and studies. Jacob Maris's work is illustrated by eleven reproductions of his pictures. In Klinkenberg we have the painter of sleepy canals with their quaint and dainty houses; and in Mesdag, the well-known exponent of fishing-boats, life-boats and calm or angry seas, who, originally a clerk in an office, became a great painter through hard work and exceeding great devotion to art.

THE ILLUSTRATIONS

[*Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.*]

"ELLICOTT SQUARE," BUFFALO, N. Y. MESSRS. D. H. BURNHAM & CO., ARCHITECTS, CHICAGO, ILL.

FOR description see article elsewhere in this issue.

ENTRANCE TO "ELLICOTT SQUARE," BUFFALO, N. Y.

COTTAGE FOR ROBERT BROOKE, ESQ., ANGLESEA, N. J. MR. CHARLES L. HILLMAN, ARCHITECT, PHILADELPHIA, PA.

HOUSE AND OFFICE FOR DR. DUDLEY TAIT, SAN FRANCISCO, CAL. MR. E. R. SWAIN, ARCHITECT, SAN FRANCISCO, CAL.

HOUSE OF H. R. GUMMEY, ESQ., GERMANTOWN, PA. MR. GEORGE T. PEARSON, ARCHITECT, PHILADELPHIA, PA.

ST. MATTHEW'S P. E. CHURCH, PITTSBURGH, PA. MR. C. M. BARTBERGER, ARCHITECT, PITTSBURGH, PA.

[The following named illustration may be found by reference to our advertising pages.]

TELEPHONE BUILDING, RUE DESRENAUDES, PARIS, FRANCE. M. BOUSSARD, ARCHITECT.

THIS plate is copied from *La Construction Moderne.*

[Additional Illustrations in the International Edition.]

THE GARDEN FRONT: "WYNDHURST," HOUSE OF JOHN SLOANE, ESQ., LENOX, MASS. MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

[Gelatine Print.]

THE TERRACE, "WYNDHURST," LENOX, MASS.

[Gelatine Print.]

TOMB OF DOGE FRANCESCO VENIER, IN SAN SALVATORE, VENICE, ITALY.

THIS plate is copied from Cicognara's "*Le Fabbriche e i Monumenti conspicui di Venezia.*"

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[1] "*Rembrandt van Rijn and his Work.*" By Malcolm Bell. £1 5*s.*

[2] "*French Painters of the Eighteenth Century.*" By Lady Dilke. £2 2*s.*

[3] "*The English Pre-Raphaelite Painters.*" By Percy H. Bate. £2 2*s.*

[4] "*Sir J. E. Millais.*" By A. L. Baldry. £7 6*s.*: Bell & Sons.

[5] "1812," by Vassili Verestchagin. £7 6*s.*: Heineman.

[6] "*Dutch Painters of the Nineteenth Century.*" Vol. II: £2 2*s.* Samson, Low & Marston.

TOMB OF CARDINAL FRANCISCO DE CISNEROS, ALCALA DE HENARES, SPAIN.

This plate is copied from "*Monumentos Arquitectonicos di España.*"

SHOPS AND FLATS, HAMMERSMITH, W., LONDON, ENG. MR. W. HARDCASTLE, ARCHITECT.

NOTES AND CLIPPINGS

Draining the Low Levels at New Orleans. — An ingenious project has been devised in New Orleans, and partly carried into execution. As is well known, a large part of that city is so little above the water-level of the Mississippi and Lake Borgne that it is difficult to secure good drainage. Indeed, some portions of the city are really below those levels. Now, a good deal of difficulty has been experienced in the past in coaxing water to run up hill. But it can be done. It has been done. And New Orleans has solved the problem. It may be remarked that the new engineering work here referred to deals only with the surface-water which comes from a rainstorm, and not the contents of the sewers. Already other means of disposing of the latter exist. It was recognized as soon as the general idea of getting rid of the storm-water was taken up that one canal, or, rather, a canal at one grade, would not afford a sufficient fall to carry off the water. It was therefore decided to cut the canal up into sections, all of them having a slight fall, to be sure, but the beginning of the second section starting at a higher level than the end of the first. In order that the first should empty into the second a powerful pump was provided, which lifted the water from the one level to the other. This plan has been followed at eight stations altogether, some of the pumping-stations being at the junction of adjacent divisions of the main canal, and some of them lifting water from a branch into the trunk. To secure the right sort of grades it has been necessary to build up the bed of the canal here and there, like a toboggan slide, and in other places to excavate. Thus enough slant was obtained to induce the water to flow out to Lakes Borgne and Pontchartrain. Not the least interesting feature of the scheme is the use of electric power for driving the pumps. Such a system makes it possible to collect all the steam-engines and dynamos at a single point. The power is distributed by wires to the various points of consumption. This arrangement is more economical than the establishment of several steam-plants, one at each pumping-station. — *N. Y. Tribune.*

House of Fantastic Design. — In the days of good Queen Anne, says *London Golden Penny*, there resided in the little North Devon fishing hamlet of Combe Martin a well-to-do squire, by name George Ley, whose luck at all card games of skill and chance was proverbial. On one occasion, so the story goes, he netted a very handsome stake indeed, and to commemorate the event resolved to build a house which, from assuming the form of a pack split up and erected castle-ways, should be a standing testimony to the pleasure and gain he had found in the "*Devil's Picture Book.*" The idea was carried out with amazing thoroughness, and the edifice equipped with fifty-two windows — a window for each card. Many of them, however, are still blocked up, a relic of the days when the window-tax placed a premium upon air and light. Again, it will be noticed that the unique style of architecture has necessitated a plethora of chimneystacks; still the *coup d'oeil* is the reverse of unpleasing, and the old gambler's fantastic production can certainly lay claim to the highest honors where absolute novelty is concerned. A memorial tablet in Combe Martin's beautiful old parish church informs us that Mr. Ley died in the odor of sanctity in the year 1716, and some few years afterward, when the family disappeared from the neighborhood, the property was acquired by an enterprising publican, who promptly christened his queerly fashioned hostelry "The Pack of Cards." The house is still an inn, at which the coaches running between Ilfracombe and Lynton make a regular stop for watering their teams, but a few years ago the then proprietor — very foolishly, we think — altered the old sign to the trite nomenclature of "The King's Arms." Combe Martin, it should be added, is now a prosperous little watering-place, which, during the summer season, can boast a visitors' list numbering three hundred or more. It is celebrated as being the scene of Miss Marie Corelli's popular novel, "*The Mighty Atom.*"

The Congestion of London. — Sir J. Wolfe Barry made a most interesting speech on the congestion of London. He believes that the "retardation" of business traffic between east and west, more especially coal traffic, costs the trade-interests of London £900,000 a year, the owners of vehicles £1,189,000, and pedestrians £65,000, or a total of £2,150,000 a year. This he would correct by cutting a single mighty street, 125 feet wide and 5 1-2 miles long, from west to east, and this, with its subsidiary connections, would cost £6,120,000. This had been ridiculed when originally proposed, but when the loss was fully understood it would be found that the saving fairly repaid the cost. The arterial street is, we fear, a brilliant dream for the present, but if London advances for twenty years as it has done for the past twenty, something very like it will have to be constructed. We wonder if it would be quite impossible on the great lines to construct underground lines, confining their use to the conveyance of goods. That would enable us to pass a law which would relieve London more than any new openings — namely, a law insisting that all vehicles in motion shall travel at an equal speed We always speak of the "stream" of London traffic, but it is the absence of streaminess which produces the fretting delays that take a year from the life of every active man. — *London Spectator.*

Death of Bernard Quaritch. — The death of Mr. Bernard Quaritch, the famous art-dealer and vender of rare books, occurred December 17. He was 82 years of age and had a world-wide reputation among bibliophiles. — *Exchange.*

A Peripatetic London Church. — St. Bartholomew's Church, Moor Lane, is once more on the move. Among ecclesiastical establishments it is a regular vagrant, but, unlike most rolling stones, it has gathered a good deal of moss in the way of endowment. Originally this ambulant building stood on the site of the Sun Insurance Office, but, having no parishioners, was bodily removed to its present position about fifty years ago. Now it is to be demolished once more and re-erected, stone by stone, in some populous suburb. St. Bartholomew the Wanderer may fairly plead that this recrudescence of nomadic habits is not due to flightiness, but to the centrifugal tendency of modern Londoners, who no longer live, like their mediæval forefathers, over their places of business and playfully empty from upper windows their dustbins on the heads of innocent wayfarers. — *London Telegraph.*

Sir Henry Tate, Bart. — Sir Henry Tate, the munificent founder of the Tate Gallery (National Gallery of British Art) at Millbank, died at his house, Park-hill, Streatham Common, on Tuesday, 5th ult. He was born at Liverpool, March 11, 1819, and he carried on business in that city for many years, until, about twenty-five years ago, he transferred his great business of the manufacture of cube sugar to London. He gave £42,000 to the newly-founded University College, Liverpool, and a still larger sum to various Liverpool hospitals. He built the Brixton Free Library, but his great achievement was the foundation of the gallery at Millbank. He offered to build a gallery, at a cost of £80,000, as well as to present his collection of paintings of the British School to the nation. It is said that he spent double that amount on the gallery. The building was completed on the very day that he took to his bed in his last illness. He was created a baronet in 1898, and he became a member of the Society of Arts in 1897. — *Journal of the Society of Arts.*

Movement in London to save the Tudor House. — The London County Council has had its attention called to the deplorable condition of the historic Tudor House, at Bromley-by-Bow, and a popular movement is on foot to have the Council preserve the mansion and convert it either into a university settlement or a museum. In either case it will be necessary to restore the interior, which it is said can be accomplished at a cost of less than $1,500. The press of London has been induced to take hold of the matter, and it is believed that the Council will be in favor of having the building at once placed in proper hands. The Tudor House has been untenanted for several years, and no attempt has been made to keep it in a state fit for habitation. All the windows on every face of the building have been riddled by the gamins of the district. The interior is in a similar state of ruin. The once beautiful and elaborately decorated woodwork has rotted, and the plaster has fallen from the walls and ceilings. The house stands near the centre of about two acres of ground, which for several years has been utilized by the people of the district as a recreation park. This autumn some improvements were made on it for the benefit of the public; the old boundary wall was demolished, and is being superseded by ornamental iron railings, through which there will be three gateways — one in St. Leonard Street and two in Grey's Road. A bandstand was recently erected in the centre of the grounds, and an open-air gymnasium is now being fitted up for boys and girls. — *N. Y. Times.*

New Sewerage Works for London. — London, with its rapid increase in population, began to outgrow its sewage facilities some time ago, and, of late, the situation has been becoming more serious month by month. A special committee of the Common Council have just presented a report recommending the construction, by degrees, of new drainage works, at a cost of $15,000,000. Their engineer, Sir A. Bonnie, points out that when the present system was established the population of London amounted to about 2,586,000 persons, and that Sir Joseph Bazalgette designed it for a total population of 3,450,000 persons, being an average of 46.9 persons per acre within the metropolitan boundary. Provision was made for a water-supply of 31 1-4 gallon per head per day, or a total of 108,000,000 gallons daily, but as it was considered necessary to provide for the fluctuating flow of the sewage at different hours of the day, the sewers were made to carry off half the total quantity of sewage in six hours of the day, together with a rainfall passing into the sewers at the rate of 1-4 inch in twenty-four hours. The maximum quantity of sewage and rainfall to be dealt with per day of twenty-four hours was estimated at 250,000,000 gallons on the north side of the Thames and 144,000,000 gallons on the south side, or a total of 394,000,000 gallons. No provision was made for taking in the drainage from districts outside the metropolitan boundary, the sewage of which is now, or about to be, partly or wholly admitted. The population of the area now draining into the Council's sewers on the north side of the Thames was, according to the census of 1896, 2,941,114, and on the south side of the river 1,689,984, or roughly a total of nearly 4,700,000 people from both sides. A proportionate increase has probably taken place during the past three and a half years, and as the present system was only intended to serve a population of 3,450,000, it results that the original estimates have been exceeded by about 36 per cent. As to the quantity of water, it is found that the average supply is about 35.4 gallons per head per day, which represents a total of about 176,380,000 gallons for the whole population, as compared with 108,000,000 gallons provided for. In summer months the water-supply is still larger, and the average dry-weather flow of several years has amounted to 194.58 million gallons daily, or 80 per cent more sewage than the amount the drainage-system was constructed to carry. — *N. Y. Evening Post.*

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THERE is a suspicion of an important judicial idea in a decision of the New York Supreme Court, just made in the case of Fox *vs.* Ireland. This case grew out of the noted disaster to the Ireland Building, where a column, which seems to have been set over an old well, sank, allowing the rest of the structure to collapse. Fox was injured in the crash, and sued the owner for damages. The courts below rejected his claim, apparently on the ground that Mr. Ireland had done all that could be expected of an owner, and that the architect and the builder, if any one could be regarded as responsible for the disaster, were the ones at fault. The Appellate Division of the Supreme Court reverses this decision, and orders a new trial of the case, on the ground that there was insufficient evidence "to show that Mr. Ireland could rightfully rely upon the architect he employed."

THIS appears to introduce a new element in such cases. While a man, in other damage suits, must show, in order to clear himself of responsibility, that he employed, or endeavored to employ, men skilled in their business to do his work for him, it has generally been assumed that all architects were skilled, and that a man might employ any one that he chose, without fear of being held accountable for his mistakes or misdeeds. From this decision, however, it seems to follow that a man in New York who employs an architect must have good reason to believe that he is skilful and sober, so that he may properly be entrusted with important work, or he may find himself called upon to pay heavy damages in consequence of the carelessness or unskilfulness of a person whom he employed without due investigation. Of course, we do not mean to say that the architect of the Ireland Building was either incompetent or careless, and the Court does not say so, but simply points out that no evidence was produced at the former trial to show affirmatively that he was a person to be trusted, and that, on general principles, this must be done in such cases. On the whole, the new principle is likely to work to the advantage of the profession. Many a man who ought to know better employs cheap, so-called architects, with the idea that he is saving money by doing so. Experience shows that this is, in any case, a very doubtful method of saving money, but if it is established that the employer will have to shoulder the consequences of the professional incompetence or carelessness of his architect, he is likely to be much more disposed to seek the aid of men whose skill and reputation will be satisfactory to a jury.

THE familiar rule of municipal liability, that citizens, who are free to vote for intelligent and zealous municipal officers, cannot tax each other for damages if they suffer injury in consequence of the incompetence or carelessness of the officers whom they elect, has received a new illustration in a case decided by the New York Court of Appeals. One Hughes, living in the city of Auburn, died from disease caused by the overflow of a defective sewer into the cellar of the house in which he lived, and his representatives sued the municipality for damages. They lost their case, as might have been predicted at the outset, the Court saying that "the remedy for "most of the evils incident to the exercise of governmental "power, whether in the State itself or in localities, is to change "the administration. The law in most cases must proceed "upon the principle that it is wiser and better for the members "of a political community, general or local, to endure some of "the evils that they have, rather than fly to remedies such as "are invoked in this case, that are certain in the end to bank-"rupt the treasury, and involve them in endless strife and "litigation."

IT is a satisfaction to learn that the National Board of Fire-Underwriters has undertaken an investigation into the subject of leaks in gas-mains in New York and elsewhere. As asphalt is substituted for stone block-pavement in the city of New York, it is found that gas from the mains, unable to escape, as it formerly did, into the air from the surface of the streets, finds its way into neighboring cellars, or into leaky sewers, where it accumulates to an objectionable, and often to a dangerous, extent. It will be remembered that the Supreme Court portion of the Capitol at Washington was very badly damaged by an explosion of gas in the basement some months ago, and nine explosions recently occurred in the sewers of New York in one day, all caused by leakage from gas-mains. It is very difficult to get statistics of such matters, as the gas-companies do not care to let their stockholders or their customers know how much money is wasted in this way; but in one of the largest American cities the leakage from the mains is known to have averaged eight hundred and seventy thousand cubic feet per year per mile of main. Any one who knows the average length of main for each customer of a city gas company, and the price charged for gas, can readily calculate the extra tax added to each customer's bill, to pay for the gas wasted in the ground. It is probable that something like one-third of the gas delivered from the retorts is lost before it reaches the consumers, and millions of dollars must be paid every year by householders in our large cities for gas which they do not get, but which is expended in poisoning the atmosphere which they breathe, and in endangering their lives and those of the public.

ACCORDING, however, to Mr. James C. Bayles, whose authority as an expert can hardly be questioned, the leakage from water-mains in cities is even more important than that from the gas-mains. Few persons, probably, will be prepared for the assertion that at least half of all the water which enters the mains of city water-systems leaks out in the streets, never entering the houses at all; yet in England, where the matter has been carefully investigated, it is found that in the majority of public waterworks the leakage in the mains is at least one-half the total supply; that it is very frequently two-thirds, and that "in many cases" it is "three-fourths, or even more"; while, according to the English report from which Mr. Bayles quotes, in America the loss is "still greater"; that is, in many towns in England, and still more in America, three gallons of water are allowed to soak away into the streets for every gallon that is delivered in the houses of the consumers. Applying to this condition of affairs the same rule as that applicable to gas-supply, the inference is that municipal water-takers pay, in this country, about four times as much for water as they would if the mains were properly laid. Officials of Water Boards understand this well enough, although as Mr. Bayles says, every engineer and official connected with water-supply seems to be sworn to conceal the facts in the case; and he hints that the inspections of houses for leaky fixtures, and annoyances of the same sort, are simply a solemn farce, intended to draw public attention away from the real source of waste.

EVERY one will rejoice that the threatened labor troubles in the building trades in Chicago have been averted, we will not say by a victory of the contractors, as we dislike to hear of victories of citizens over their fellow-citizens, but by a return to common-sense on the part of the workmen. The contractors had made up their minds to take advantage of the dulness of building operations in the city to resist the arrogant dictation of the leaders in the labor unions. It will be remembered that the latter held a meeting some weeks ago, at which they resolved that six hours should constitute a day's work in the building-trades in Chicago. This resolution was probably intended merely as a defiance of the employers, but it showed the reckless and arbitrary spirit of the unions; and another rule, limiting the amount of work that every union man should do in a day, would probably have been enforced if the contractors had not determined on resistance. The latter, early in the winter, gave notice that they would not submit to this, or to certain other rules which had been adopted; and that, unless they were repealed, all building operations in which they were concerned should cease on the first day of January. This would have thrown about thirty thousand men out of employment, and the more sensible of the workingmen seem to have thought that it was time for them to make themselves heard. Committees were appointed on both sides, and the result, which the most sanguine friend of his fellowmen would hardly have ventured to predict, has been the adoption, by employers and men, of the Boston plan, under which a permanent board of arbitration is established, consisting of five representatives from each side, which must immediately decide all questions or disputes between employers and labor organizations in the building trades. If the Board fails to come to an agreement on any question, it is to select a referee, to give the deciding vote. Under this plan, as has been shown in Boston, not only are sympathetic strikes — the bane of employers and men alike — but strikes in general, practically avoided; and all persons concerned in building operations in Chicago have reason to congratulate themselves on this happy solution of their difficulties.

THE New York Soldiers' and Sailors' Monument is, at last, to be built somewhere, although, even now, the site is not positively determined. After the abandonment of the Plaza site, and with it the beautiful original design for the monument, a small hill near the Riverside Drive, known as Mount Tom, was selected. This proved objectionable for several reasons, and another place, beside the Riverside Drive, and nearly opposite Eighty-ninth Street, was selected. This site has again been objected to, by the Society of Landscape Architects, but it seems likely that the Board of Park Commissioners, who have been selecting sites, and having them objected to, for seven years, will abandon the attempt to satisfy everybody, and will proceed to erect the monument on the spot last chosen.

THAT the Society of Landscape Architects is justified in objecting to the site now fixed upon is obvious to all who know the locality in question; but it is one thing to find a suitable site for a monument, and another, and much easier, thing to object to some one else's choice; and unless the critics can agree on some other place, the Park Commission is likely to use its own judgment. The fact is that there is no very good place on the Riverside Drive for an important monument. Even the Grant Memorial, which is rather a tower than a monument, and, as a tower could be placed almost anywhere with propriety, is by no means happily situated; and, while, as a light-house, it would be imposing, its effect as a monument, standing, as it does, on a bleak hillside at the extreme edge of the city, recalls rather painfully the undeserved discredit and neglect from which the great general suffered at the end of his life. If, however, there is no very good place on the Riverside Drive for monuments, there is no such place, perhaps, anywhere in New York. At least half the artistic value of anything of the kind depends on its surroundings, and these must be arranged for it beforehand. No more fatal mistake can be made in municipal decoration than to imagine that important works of art can, with good effect, be deposited at random in streets or parks in which no provision has been made for them. To show monuments with advantage, the streets of a city should be laid out expressly for their accommodation, providing open spaces, at the intersection of important avenues, in which they can be seen from a distance in several directions, and where they will, so to speak, form a central ornament from which the streets may radiate. The Arc de l'Étoile, the Vendôme Column, the Column of July, and, particularly, the monument in the Place de la République, in Paris, furnish examples of the successful management of such sites. For miles in each direction the traveller can see the monument sufficiently to have his interest excited, and, as he approaches it, the impression which it makes upon him increases in intensity, and develops, as he sees more and more of the detail, in a manner very advantageous to artistic effect. In our cities, such provision for great monuments is unknown. There are a few accidental open spaces, where streets meet at an angle, but these, being obviously fortuitous, as well as ungainly in shape, are not in themselves attractive, and do not furnish such favorable situations for monuments as are presented by rectangular spaces, the surroundings of which harmonize much better than those of a polygonal area with the lines of a rectangular pedestal.

THE opening of the Chicago Drainage Canal was accomplished without any ceremony, and in the presence only of a few of the people interested in its construction, for the curious reason that, although the work has been going on for fifteen years, and endless plans, cuts, photographs and descriptions have been published to show how the sewage of Chicago was to be diverted through it to the Desplaines River, and thence to the Mississippi, the people who live in the neighborhood of the new channel seem to have just discovered, after thirty million dollars have been spent on the work, what it was intended for, and it was seriously threatened that an appeal would be made to Congress to order operations suspended until the claims of the riparian towns from Chicago to St. Louis could be investigated by a Congressional committee. As this would mean several years' delay, and as, by New Year's Day, everything was ready for the completion of the undertaking except the removal of a barrier of earth which separated the Chicago River from the new channel, it was decided to cut through this before the expiration of the Congressional recess, so that, if an investigation should be ordered when Congress reassembled, the city would, at least, have its drainage waters flowing meanwhile into the Mississippi, rather than into the lake. With a few hours' quiet work the change was accordingly made, and Congress will have the advantage, if it decides to make an inquiry, of studying the actual conditions produced by the canal in the valley below, instead of listening to the theories of experts as to what the conditions would be under given circumstances.

THE recent geological investigations, which show a rather rapid subsidence of the south shores of the great lakes, add an important factor to the problem of the drainage of Chicago. It seems likely that the sewage of the city is, at present, insufficient, in comparison with the volume of water by which it will be diluted, to do much harm to the towns situated on its route, and, as the city grows, and its waste waters increase in amount, it seems likely that at least an equal increase will be produced by natural causes in the volume of pure lake water poured through the Chicago River in connection with it. In fact, in the course of a thousand years or so, we are told that the Niagara River will be nearly dry, and that the lakes will discharge their waters mainly into the Mississippi. Any approach to this condition should render the Chicago sewage harmless; but, meanwhile, the question whether, under present circumstances, the flow is injurious to any one, will be of much interest.

A CERTAIN M. Berlier has, it is said, devised a scheme for connecting Europe and Africa by means of a tunnel under the Straits of Gibraltar, and some of the French newspapers point out that such a tunnel, with a railroad through it, would do much to promote commerce between Europe and Africa, and particularly between France and its African colonies. As the distance across the straits, from land to land, is only about seven miles, the scheme would seem feasible enough, were it not for the great depth of the water at that point. According to the charts, the hundred-fathom line runs very near the shore on each side, leaving a space two or three miles wide in which the water must be not far from a thousand feet deep. So far as we are aware, no submarine tunnel has yet been built at a greater depth than twenty or thirty feet, and the difficulties in the construction of one at a depth of a hundred fathoms or more would be enormous. To say nothing of a hydrostatic pressure of more than twenty tons to the square foot of the shell enclosing it, a gradient of three or four hundred feet to the mile would be a serious obstacle to the use of the tunnel for the passage of railway trains. Whether British military interests would favor the construction of such a tunnel no one probably can say, but it is extremely unlikely that the question will ever be brought before them.

THE DEWEY ARCH. — I.

THE Dewey Arch, erected by the National Sculpture Society on the occasion of the reception to Admiral George Dewey, U. S. N., by the City of New York, is remarkable not only for the extraordinary beauty and success of its design, and for the rapidity with which it was brought to completion, but also because it affords the most notable instance of coöperation among artists in this country; a coöperation, moreover, that was effected without any compensation or thought of pecuniary reward on the part of the distinguished men who so gladly gave their services and their work to the adornment of their city. The National Sculpture Society is, as is well known, a national organization, with a professional and non-professional membership that includes sculptors and art-lovers from all parts of the country, as well as a number of members who permanently reside abroad; but the Dewey Arch was so far a local work that with but one exception all the artists engaged upon it were New Yorkers. The exception was Mr. John J. Boyle, a native New Yorker, who has resided in Philadelphia for a number of years, but who has always maintained a close and constant connection with the metropolis. Neither the time allowed for the erection of the arch nor the occasion permitted or required the coöperation of other artists; and while the Dewey Arch is the most considerable undertaking carried out by the Society, it was more especially a New York work than anything else the Society has accomplished.

The origin of the arch was due to Mr. Charles Rollinson Lamb, the Second Vice-President of the Society. The suggestion met with an enthusiastic response; first, in an informal way, at a dinner of the sculptor-members of the Society given by its Secretary; then it was formally adopted by the Council of the Society, its governing board; and, for the third time, at a meeting of the sculptors, at which each man pledged himself to do whatever work might be required of him. The artists of this country have at no previous time given evidence of a loftier patriotism than in the eager way in which the sculptors embraced the plan. It is true that they were not called upon to do more than make the sketches from which the final and enlarged figures and groups were to be made; but every one familiar with the methods of artists knew that much more than that would be required in the end. And such proved to be the case; for many of the sculptors not only actively superintended the enlargement of their designs before they were placed on the arch, but actually worked on the arch itself, giving as much time and personal energy to the work as was permitted by the shortness of the period allowed for its completion. Moreover, it required more than ordinary courage to agree to make a sketch for a monumental design in a very short period; and then entrust its enlargement to others, with the certainty that only the slightest personal supervision could be given to the work, and an absolute prohibition of that correction of errors and that re-doing of what has been done that is the almost invariable procedure in sculpture-making.

These are some of the technical difficulties and conditions that had to be accepted and agreed to before anything could be done; and that they were agreed to at the outset, and not rebelled against in the sequel, is eloquent testimony to the pure patriotism that animated the sculptors in their noble undertaking. But more than this was needed. Not only had the sculptors to agree to methods and conditions almost completely the reverse of those under which they ordinarily worked, but there was the question of coöperation, of mutual giving and taking, of mutual dependence and coöperation, without which nothing whatever could have been accomplished.

A few years ago it would have been utterly impossible to propose a work on which twenty-five sculptors could be harmoniously engaged, and, indeed, the time is not far behind us when such a scheme of coöperation would have been impossible to any group of artists. But it is the distinction of the artist-societies that, even if they have sometimes failed to produce that increased interest on the part of the public for which they were largely founded, they have at least brought the artists in touch with one another in a helpful way that would have been impossible by any other method. They have learned to know one another not only personally, but in a helpful personal-professional way that has brought about a wholly new feeling in professional circles. No society has been more successful in this than the National Sculpture Society, which for the first time brought together a body of men in an important profession that, until its formation, had no professional organization of its own. The Dewey Arch, standing to-day in its completed beauty in Madison Square, is perfect and complete testimony to the thorough way in which the value of artistic coöperation has been accepted and agreed in by the sculptors.

The artistic difficulties swept away by frankly admitting the very things that, under other circumstances, would have been advanced as insuperable objections to doing anything at all, there remained the practical objections which were anticipated in proposing any extensive artistic work to the municipal authorities. The Committee appointed by the Council of the Society to carry out Mr. Lamb's idea — which at the outset was the general thought of offering artistic service rather than the execution of a specific plan — consisted of Mr. J. Q. A. Ward, President of the Society; Mr. Karl Bitter and Mr. F. Wellington Ruckstuhl, sculptors; Mr. Charles Rollinson Lamb, architect; and Mr. John De Witt Warner. The offer of the Society was immediately made to the Mayor as representing the city and as Chairman of the Reception-committee. Into the details of the arrangements between the city and the committee it is unnecessary to enter. It is sufficient to state that the practical difficulties disappeared as rapidly as the artistic difficulties. Aldermanic opposition, the delays in securing appropriations, the opposition of officials, were all swept away in the enthusiasm created by the Society's patriotic offer. The Society's suggestion took the definite form of a proposal for a triumphal arch: its programme was accepted; its estimate of cost approved, and the work begun. The Madison Square Garden Company, a private corporation, offered the use of its basement free of charge for the enlargement of the groups and the preparation of the staff ornaments, and the thanks of the city and of the Society are due it for this very generous assistance.

Among those who have noted the great success with which the plan was carried out not a few viewed the extraordinary success that has attended every part of the work as a triumph of the artistic over officialism. It is an unfortunate and ill-grounded point-of-view to regard the authorities of any city or of any party as opposed to the good and the beautiful in life. The professional politician takes another view of affairs than the professional artist, and it is hardly fair for one to judge the other from his own exclusive standpoint. The relations between the municipal authorities of New York and the National Sculpture Society on the occasion of the Dewey celebration were of the happiest description, and show, so far as the former are concerned, that the artists have only to propose a definite, practical, popular scheme to ensure its adoption. It too often happens that proposals for civic embellishment are neither practical nor popular; it was a happy combination of these most important elements in the scheme for the Dewey Arch that led to its immediate acceptance by the city officials, and the subsequent agreeable and courteous intercourse during the carrying out of the work.

Although the idea of an arch met with instant acceptance, some little discussion was occasioned as to the best site. The location at the junction of Fifth Avenue and Broadway at Madison Square was due to Major-General Daniel Butterfield, Chairman of the Plan-and-Scope Committee created by the municipality for the reception of Admiral Dewey. It possessed advantages that belonged to no other situation. Even before the route of the parade was determined, it was evident that it would pass this point; it was a spot so nearly central in the life of the busy city as to be for all practical purposes the real centre; and it afforded a larger open area than could elsewhere be had without considerably diminishing the accessibility to the arch. Moreover, the junction of the two principal thoroughfares of the metropolis formed here a focal point of special importance. All things considered, therefore, Madison Square seemed not only the most suitable place for the arch, but really the only one available.

The site offered both advantages and disadvantages. The junction of the two principal streets formed by no means the most spacious thoroughfare in the city; but a real sense of openness was obtained by the immediate proximity of the square on the one side and the relatively low elevation of the buildings on the other side between Twenty-third Street and Twenty-fifth Street. The junction of Twenty-third Street, which is a wide street, also adds to the space at this point, which is further increased by the sloping off of the park towards Twenty-third St. The road-bed of Fifth Avenue is but forty feet wide, and the problem for the architect was to place an arch of monumental proportions — seventy feet wide — on the designated site. Obviously there was not room in the Avenue itself; nor, on the other hand, could the space filled by the railroad tracks in Broadway be interfered with. The necessary space was, however, obtained by moving the arch to the eastward to the house-line of the Avenue, the open space permitting the arch to be seen without producing the effect of being off the centre of the main street. By selecting Twenty-fourth Street for the transverse axis of the arch it was possible to build an approach or colonnade on each face, north and south, forming a great parallelogram and creating a monumental square where theretofore there had been merely the crossing of two streets.

The colonnade, which thus formed a court of honor on the north and south faces of the arch, was built of double columns returned at right angles at Twenty-third Street and Twenty-fifth Street, where they form groups of three. The *motif* of the double columns was obtained from the double columns placed on the sides of the arch. Some slight width was given to the design by doubling the thickness of the columns, so that the western side of the columns on the east register with the eastern side of the columns of the arch, and *vice versa*. Thus, when seen through the colonnade, the arch seems to be increased in width. Both arch and columns were designed as a single work, and were, from the beginning, considered together. The bases of the columns and of the four great piers of the arch are on the same level, some discrepancies in Fifth Avenue being made up in the lower members of the columns. The latter, both in capital and base, are identical with those of the arch, all being likewise of the same height. Though for economical reasons the columns of the colonnade were finished plain, while the arch columns are fluted, the general effect is very fine, and no objections can be made to the difference.

Now that the arch has been completed, it is apparent that in itself it has sufficient dignity to stand alone; but the columns of the colonnade are still an essential feature of the design and add greatly to the majesty of the whole conception. Moreover, the entrance-group of three columns afford pedestals for some of the most beautiful sculpture in the entire scheme, and are themselves so fine that the whole, the columns, their groups and the arch, form a unity of considerable extent and very unusual artistic success. Whether the colonnades were so happy in their practical effect is not quite so certain. Although the pleasantest relations existed between the committee of the Society, the city officials, the architects and the builders of the grand-stands at Madison Square, it must be admitted that the latter detracted very much from the general effect. Not that a difference resulted from the immediate juxtaposition of the work of different designers, the architect of the arch and the architects of the stands, for the latter cordially welcomed the suggestions of the former; but the mere enclosing of the whole surrounding space with gigantic stands, reaching as high as the third floor of the adjacent buildings, created a background that could not but be harmful to a structure which, like the arch, was intended to be freely seen from all points-of-view. On the north side of the arch both sides of Fifth Avenue were filled in with high stands, and the broad street became a narrow thoroughfare between structures, the like of which do not ordinarily bound streets nor surround triumphal arches. But it could not be helped. The arch was the focal point of the parade. It not only was the most important decoration in the whole city but it marked the site of the reviewing-stand from which the guest of honor reviewed the great land parade.

And here followed one of the chief misfortunes of the festival. The northern court was complete in itself. On the north it was approached by the decoration of garlanded poles and gilded statues prepared by the National Society of Mural Painters as its contribution to the great celebration. On the east and west it was bounded by the columns of the arch-colonnade; on the south it was closed by the arch itself, and the reviewing-stand for the Admiral was on the east side of the court. On the south the court was bounded by a great grand-stand on the west; on the east was the Fifth Avenue Hotel, and it was open on the south towards the city. The misfortune of the day came from stopping the Admiral at his reviewing-stand, leaving the procession alone to pass beneath the arch that had been built for the Admiral's special honor and distinction. The guests of the city, who, by the way, included the sculptor-members of the Society, seated on the stand to the south of the arch, were thus deprived of the privilege of seeing the Admiral. As a man in the crowd behind the present writer remarked, "What was the use of building a $40,000 arch, if they did not take Dewey through it?"

This, of course, was not the fault of the Sculpture Society, but it is possible that the completeness of the court of honor in which the reviewing-stand was situated may have helped the military authorities, who were responsible for the land parade, in reaching the extraordinary decision they did in declining to take the Admiral through his own triumphal arch. It may safely be asserted that the like of this never before happened in the history of military triumphs.

The design of the arch was frankly based on the Arch of Titus in Rome, perhaps the most graceful and most beautiful of Roman arches; but it differs from its prototype in many respects. The most radical change was the essential one of deepening it from the comparatively flat structure of the Roman city to one deep enough to permit transverse or right-angled penetrations. The attic is considerably lowered, so as to form a proper screen for the statues of admirals placed against it, as well as to serve as a base for the group surmounting it. The attic is also recessed to give standing-room for the figures before it, and the columns are increased from half-columns to three-quarter columns. The keystone was changed to support a shield and eagle.

Athough only a temporary structure, built in two months' time, and for a single day, the Dewey Arch eclipsed the Roman arch in beauty and in sculpturesque decoration. Of the latter there is no doubt; and of the former one needs but a cursory comparison to be satisfied with the supremacy of the American arch. While it is true the arch was designed for an abundant display of sculpture — and it was perfectly right, under the circumstances that called it into being, that such should be the case — its architectural character is extremely fine; and even were it to be stripped of its sculptured adornments, it would still possess great interest and beauty. And this, it will readily be admitted, is no small success for a structure designed primarily for the display of sculpture. Yet there is no hint of a deliberate sculpturesque end in the decorations of the arch. The great groups on the north and south faces, the panels over the side-arches, the figures of admirals on the attic, the portrait-medallions on the side spandrels, the great group that crown the whole, all filled natural positions and helped the design of the whole without the slightest hint of having had positions made for them. Though built for sculpture, the arch is not a sculptor's arch, but a fine piece of decorative architecture. And that was just the sort of work needed for the Dewey celebration.

Viewed strictly as a work of architecture, and without decorative significance, the arch is equally successful. Placed in the midst of busy streets, thronged with a great traffic of vehicles and foot-passengers, built, moreover, of a fragile material, and constructed in a temporary manner, albeit with ample stability, it was essential that the decorative features should be lifted high enough to be out of reach of the passer-by, and that the architectural enrichment, in the lowest part, be of the slightest. If, therefore, the base of the arch is plain and severe, it must be remembered that this was necessitated by the situation; for unlike all other triumphal arches with which we are familiar, it had its place in the busiest part of the city, without the advantage of park arrangement and with only police protection to preserve it. How indifferent the latter might become, even under the favorable conditions that attended the erection of the arch, was apparent from the fact that the parade had scarcely completed its triumphal march past the Admiral before the vandals made an attack upon the arch, carrying off huge pieces of plaster as mementoes.

At every point, therefore, the designer was beset with conditions such as never before surrounded the designer of a triumphal arch. If the structure of the arch is plain below, it is relieved by strong, yet simple, mouldings, whose ample projections afforded a delightful relief of shadow, which is one of the most valuable means of securing architectural variety. The same rule was followed in every part, and while the general effect is rich and satisfying, the architectural enrichment, the ornamental detail, is relatively slight. It is the shadow that counts; — the strong, sharp, brilliant shadow obtained by vigorous projection against a pure-white surface.

The south side is practically the main front, since it is in that direction that the group on the summit of the arch is faced. This position was determined upon at the very beginning of the work, before the route of the land parade was settled, and seemed the natural direction, since the figure of Naval Victory faced the direction of the water-entrance to the city. It thus happened that the parade approached the arch from what may properly be termed the back; yet the design of President Ward's group was such that little difference was felt from this circumstance, the central figure alone presenting a rear view to the Admiral as he entered the Court of Honor.

Although the sculptors who volunteered their work for the arch were numerous, it was possible to make an important assignment to each of them. The largest groups were on the great piers between the columns carrying the entablature. Emblematic figures in the arch-spandrels and four figures of admirals and naval heroes on the attic completed the decoration of each front. On the sides, the sculpture consisted of allegorical panels, and the decoration was completed with portrait-medallions on the interior and exterior arch-spandrels. The whole scheme may best be viewed in tabular form.

Pier Groups. North Side: to the east, "The Call to Arms," by Philip Martiny; to the west, "Peace," by Daniel C. French.

South Side: to the east, "The Combat," by Karl Bitter; to the west, "The Triumphal Return," by Charles H. Niehaus.

Spandrels. North Face: to the east, "Pacific Ocean"; to the west, "Atlantic Ocean," by Isidore Konti. South Face: to the east, "The East River"; to the west, "The North River," by R. Hinton Perry.

Attic Figures. (Counting from east.) North Face: Admiral Farragut, by W. Ordway Partridge; Commodore Hull, by H. K. Bush-Brown; Commodore Perry, by J. Scott Hartley; Commodore Jones, by E. C. Potter.

South Face. (Counting from east.) Commodore Decatur, by George T. Brewster; Admiral Porter, by J. J. Boyle; Lieutenant Cushing, by H. Augustus Lukeman; Commodore McDonough, by Thomas Shields Clarke.

Side Panels. East Face, "Protection of Our Country," by William Couper; West Face, "Progress of Civilization," by John Gelert.

Medallions on Spandrels of Transverse Arches. East side, exterior: North, Admiral Davis, by F. W. Kaldenberg; south, Admiral Foote. Interior: North, Commodore Bainbridge, by Ralph P. Goddard; south, Admiral Dahlgren, by Caspar Buberl. West side, exterior: North, Commodore Preble, by Carl F. Hamann; Commodore John Barry, by F. W. Kaldenberg. Interior: North, Admiral Worden, by Frederick Moynihan; south, Captain Lawrence, by Henry Baerer.

Group surmounting the Arch: "Naval Victory," by J. Q. A. Ward.

Groups at Entrance of North Court of Honor. East side, "The East Indies," by Charles Albert Lopez. West side, "The West Indies," by Isidore Konti.

Groups at Entrance of the South Court of Honor. East side, "The Army," by F. Wellington Ruckstuhl; west side, "The Navy," by George E. Bissel.

Figures on Intermediate Columns between the Entrances of the Court of Honor and the Arch: "Victory," by Herbert Adams.

Inscriptions.

NORTH:

TO THE GLORY OF THE AMERICAN NAVY AND IN GREETING OF OUR ADMIRAL, A GRATEFUL CITY, RELYING ON THEIR VALOR, HAS BUILT THIS ARCH, MDCCCXCIX.

SOUTH:

TO ADMIRAL GEORGE DEWEY, GREETING, WELCOME, HONOR, FROM THE PEOPLE OF NEW YORK, SEPTEMBER 30, MDCCCXCIX.

EAST:

MANILA.

WEST:

SANTIAGO.

[To be continued.]

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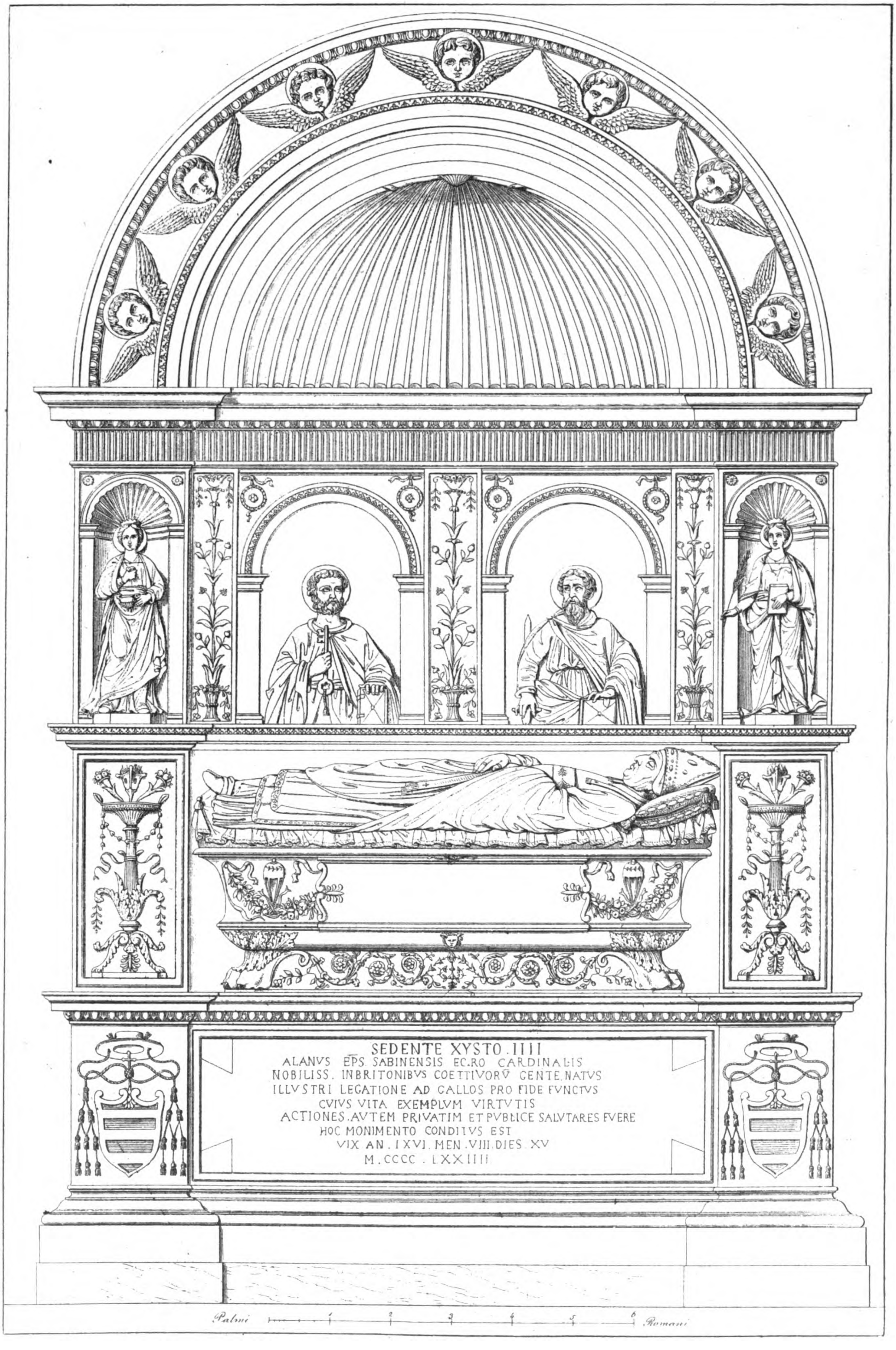
SEDENTE XYSTO IIII
ALANVS EPS. SABINENSIS EC.RO CARDINALIS
NOBILISS. INBRITONIBVS COETIIVORV̄ GENTE.NATVS
ILLVSTRI LEGATIONE AD GALLOS PRO FIDE FVNCTVS
CVIVS VITA EXEMPLVM VIRTVTIS
ACTIONES.AVTEM PRIVATIM ET PVBLICE SALVTARES FVERE
HOC MONIMENTO CONDITVS EST
VIX AN. LXVI. MEN. VIII. DIES. XV
M.CCCC.LXXIIII
Palmi
1
2
3
4
5
6
Romani

TOMB OF CARDINAL CETTI, IN SAN PRASSEDE, ROME.

AMERICAN ARCHITECT AND BUILDING NEWS, JAN. 13, 1900. No. 1255

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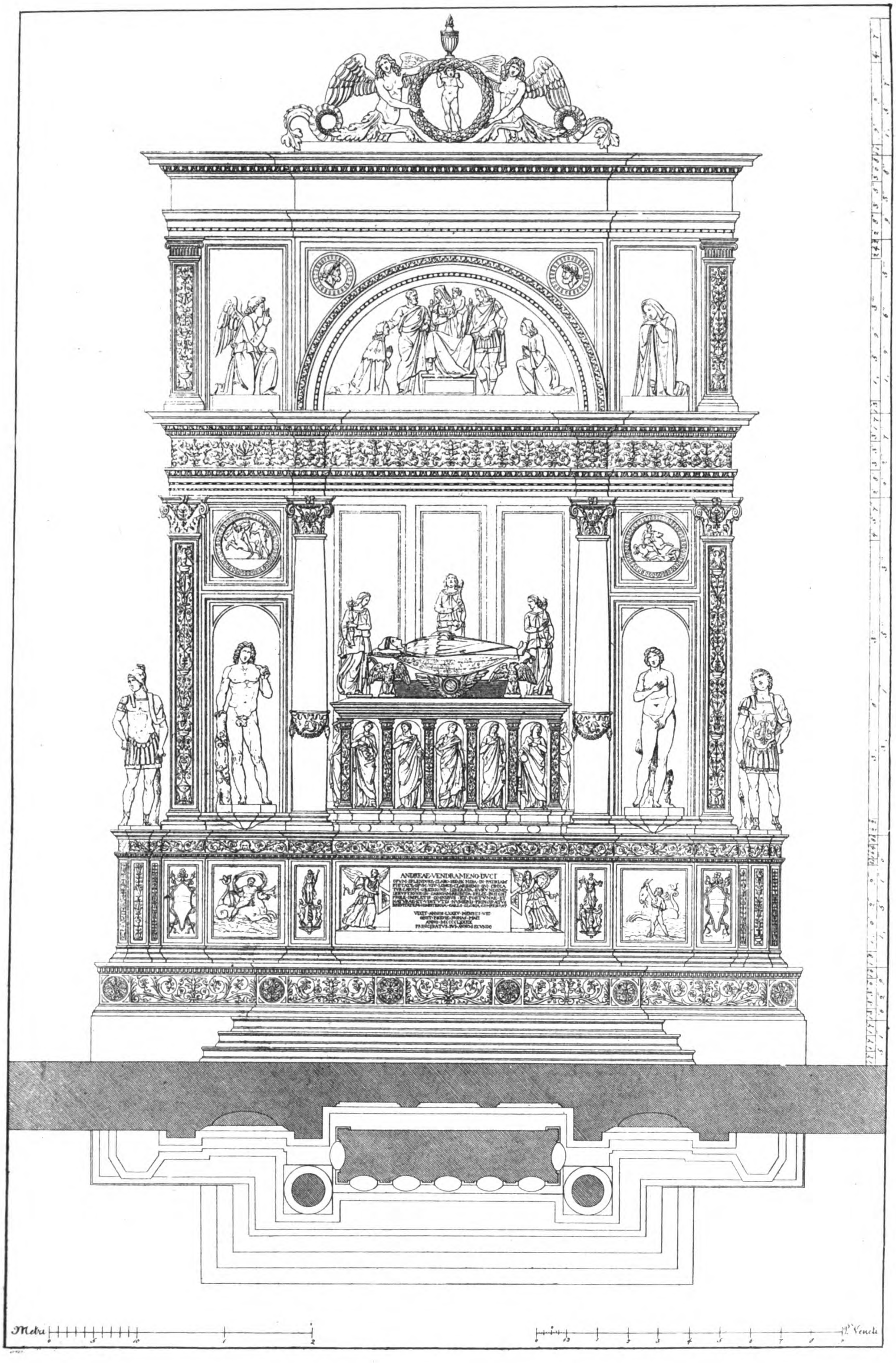

TOMB OF DOGE ANDREA VENDRAMIN, IN SS. GIOVANNI E PAOLO, VENICE.

American Architect and Building News, Jan. 13, 1900 No 1255

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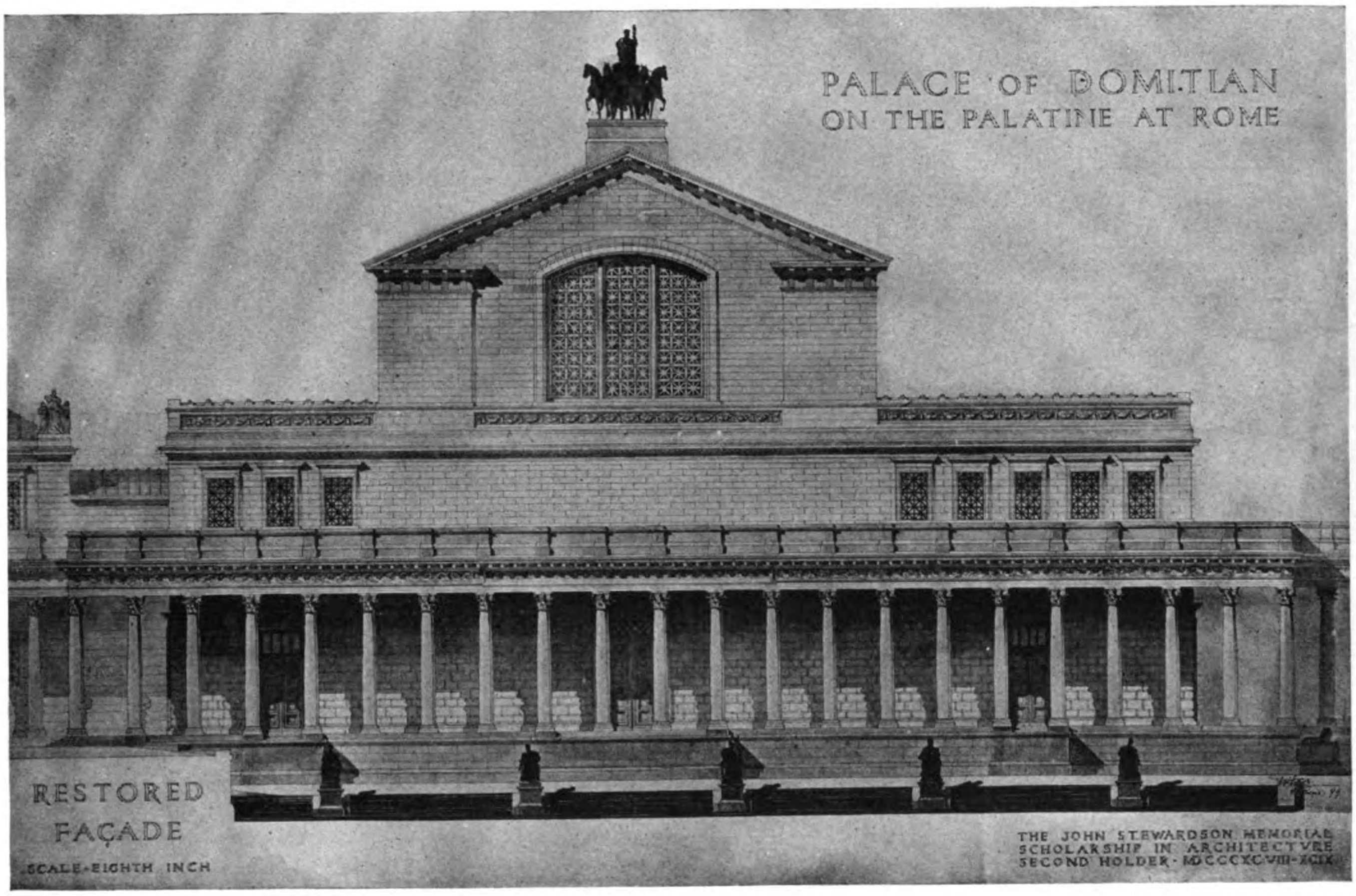
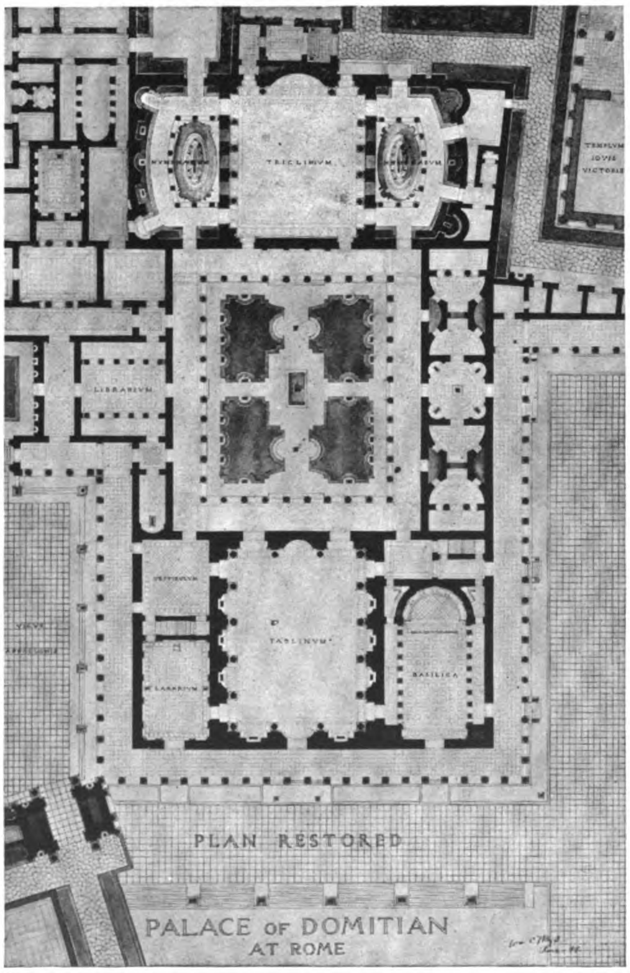

PALACE OF DOMITIAN
ON THE PALATINE AT ROME
RESTORED
FAÇADE
SCALE-EIGHTH INCH
THE JOHN STEWARDSON MEMORIAL
SCHOLARSHIP IN ARCHITECTVRE
SECOND HOLDER · MDCCCXCVIII-XCIX

Restored Façade of Palace of Domitian, Rome.
By Wm. Charles Hays, Philadelphia.
Second Holder—John Stewardson Memorial Scholarship.



Restored Plan, Palace of Domitian, Rome

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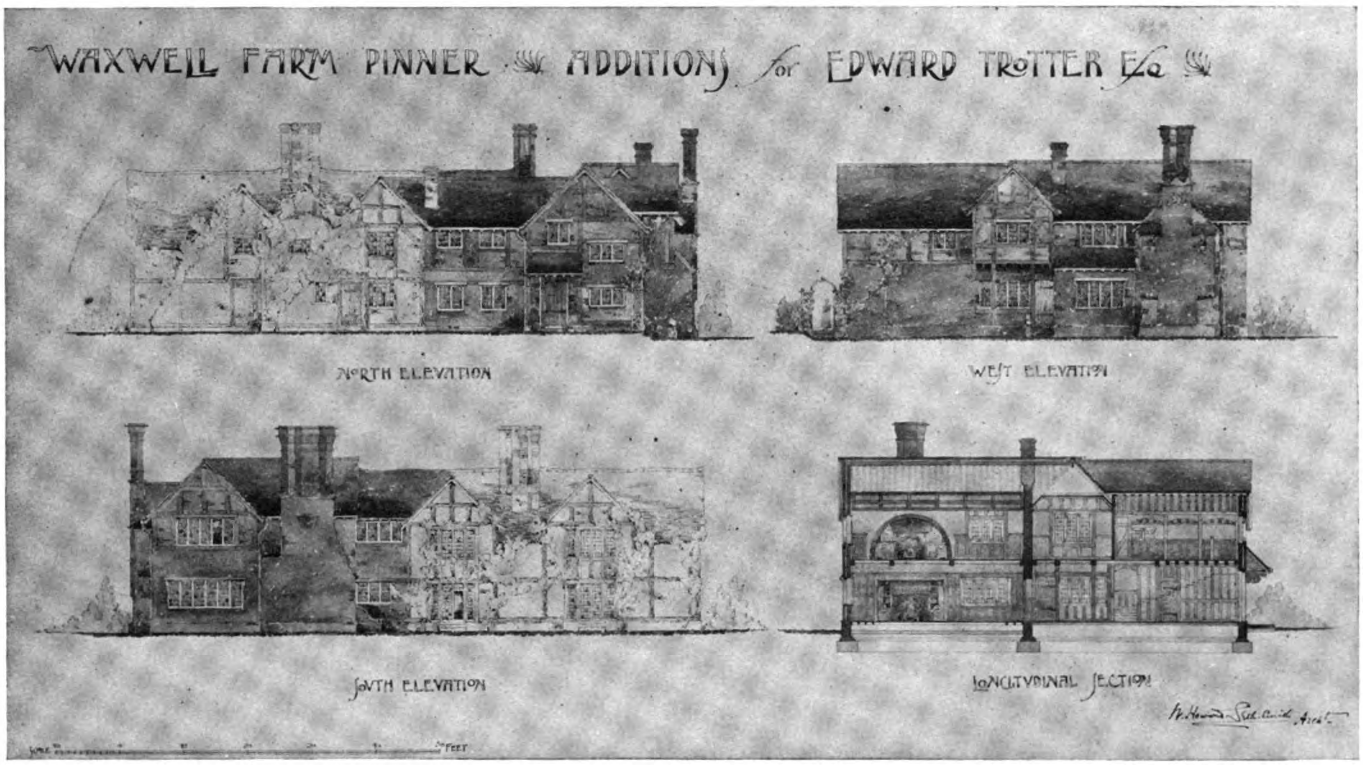
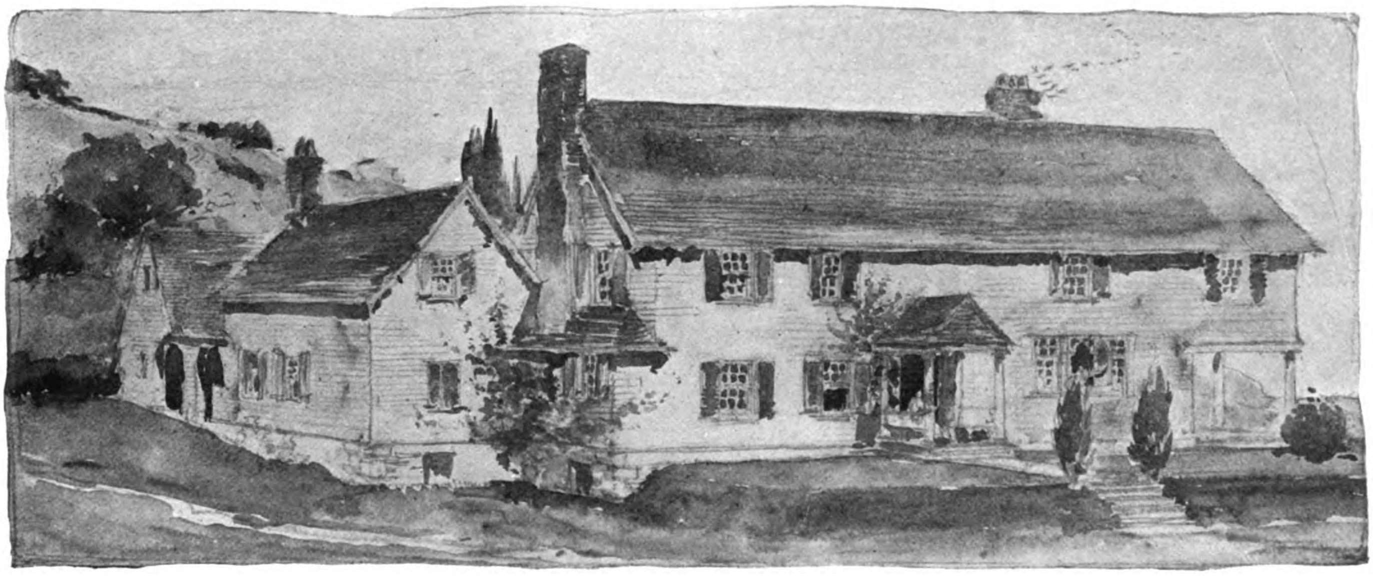
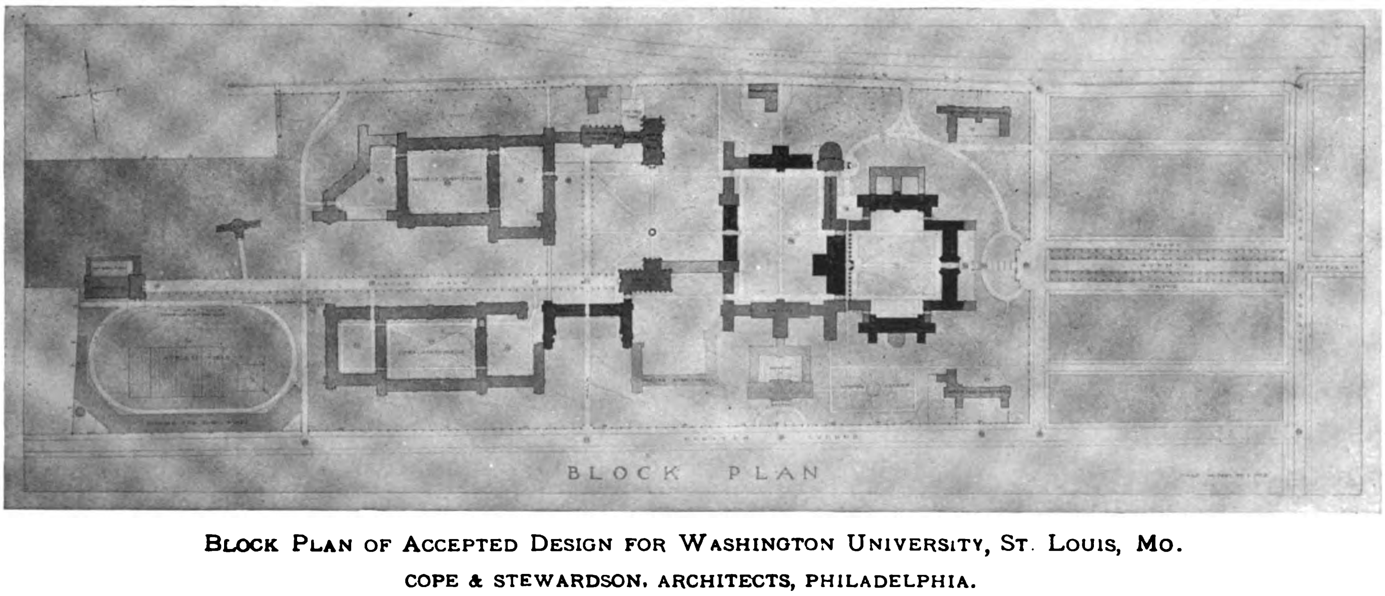

WAXWELL FARM PINNER ADDITIONS for EDWARD TROTTER Esq
NORTH ELEVATION
WEST ELEVATION
SOUTH ELEVATION
LONGITUDINAL SECTION
W. Harold Seth-Smith Archt.
FEET

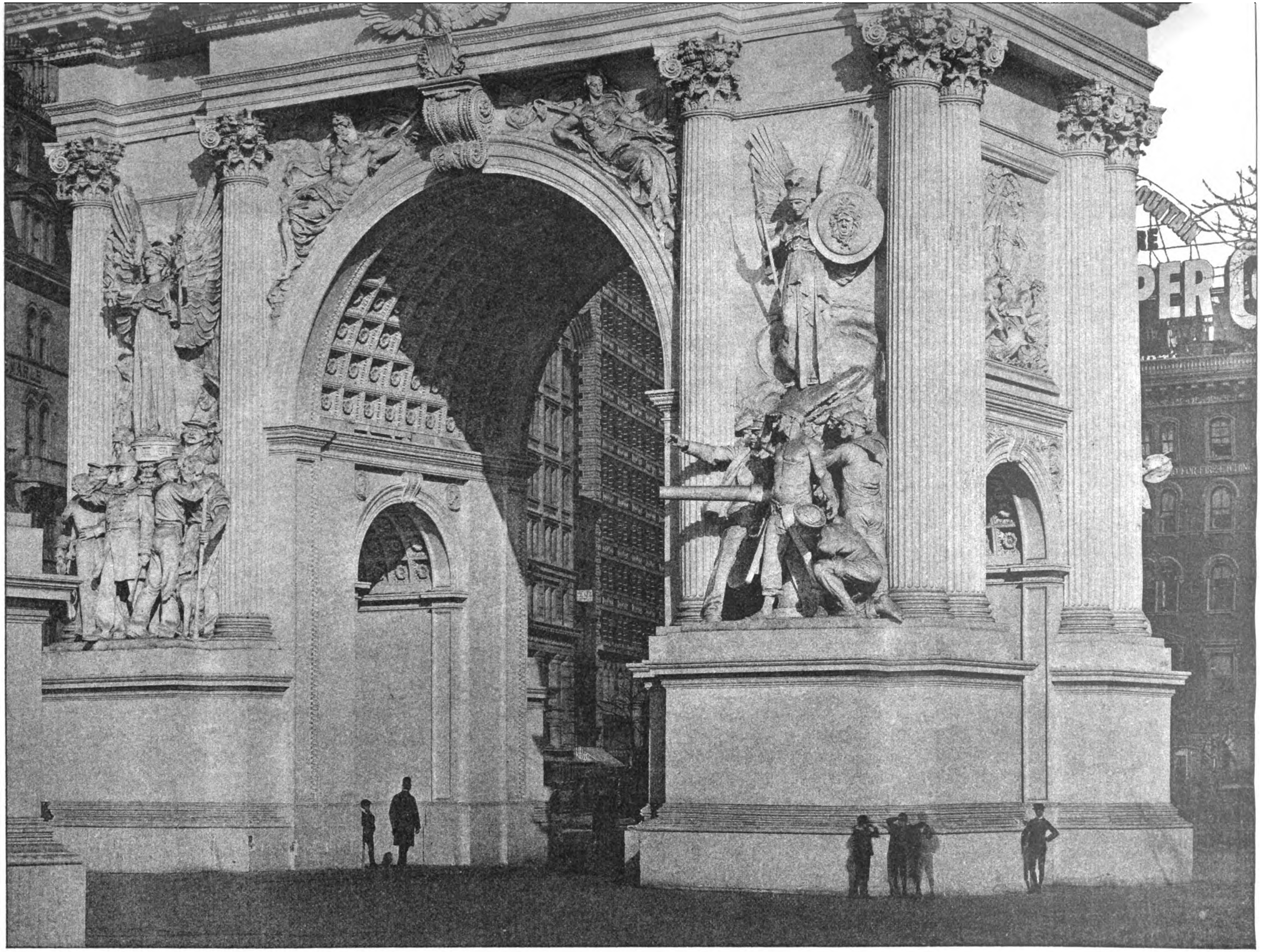
ADDITIONS TO WAXWELL FARM, PINNER, ENGLAND.
W. HAROLD SETH-SMITH, ARCHITECT, LONDON.



SKETCH OF A HOUSE FOR STEPHEN PARRISH, ESQ.
WILSON EYRE, JR., ARCHITECT, PHILADELPHIA.



BLOCK PLAN OF ACCEPTED DESIGN FOR WASHINGTON UNIVERSITY, ST. LOUIS, MO.
COPE & STEWARDSON, ARCHITECTS, PHILADELPHIA.



Neg. by H. H. Sidman.

THE DEWEY ARCH, FROM THE SOUTHEAST, NEW YORK, N. Y.

HELIOTYPE PRINTING CO., BOSTON

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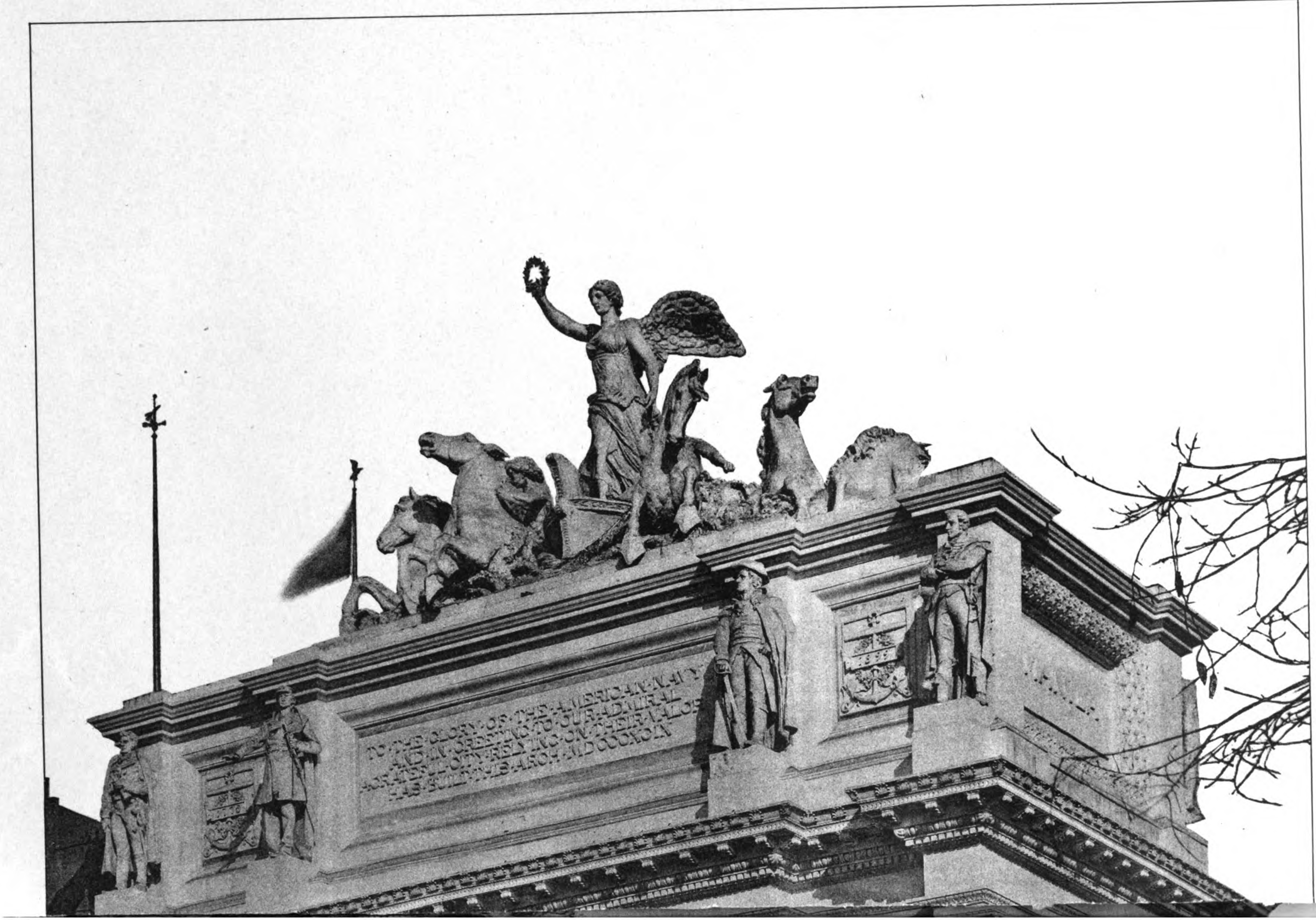
TO·THE·GLORY·OF·THE·AMERICAN·NAVY
AND·IN·GREETING·TO·OUR·ADMIRAL
A·GRATEFUL·CITY·RELYING·ON·THEIR·VALOR
HAS·BUILT·THIS·ARCH·MDCCCXCIX

THE T-SQUARE CLUB EXHIBITION.

LAST summer in the convocation of the various societies which resulted in forming the Architectural League of America, it was decided to simplify the management of the different exhibitions, by arranging their dates in a sequence, so that the drawings might pass from one city to another without the necessity of directions from each exhibitor for every exhibition. The T-Square Club has always managed the yearly architectural exhibitions in Philadelphia, and they have now included with theirs those drawings to be shown in the series. This, being the first of the series, is particularly interesting, as there is a chance to review what later is to be shown in New York, Baltimore and the West.

The tendency of the Philadelphia exhibition in preceding years has been toward a stronger representation of modern English work. It is markedly noticeable this time, and the effect shows in the local domestic architecture; but in larger work the influence of the École des Beaux-Arts is almost supreme, and the formerly paramount Mediæval and Renaissance architecture of Italy and France seems to be becoming a thing of the past. The French influence is evident particularly in the designs submitted in the various competitions, and above all, in the Phœbe Hearst competition for the University of California. The Regents of the University send exceptionally clear photographic enlargements of the ground-plans and perspectives of the five prize designs; namely, those of E. Bénard, of Paris (First Prize); Howells, Stokes & Hornbostle (Second Prize); Despradelle & Codman (Third Prize); Howard & Cauldwell (Fourth Prize), and Lord, Hewlett & Hull (Fifth Prize); also of several of the others selected to enter the final competition. These great photographs are decidedly the centres of attraction, and the various compositions of the college buildings on this California hillside and the use the architects have made of the approaches and natural contours of the ground, form perhaps the most interesting study of the exhibition.

In a totally different spirit from these, and principally inspired by the English Universities of Oxford and Cambridge, is the winning design in the competition for the Washington University at St. Louis, the block-plan of which Cope & Stewardson exhibit. Cass Gilbert shows the plan of another of these designs, but this again is French. Among the various competitions, those for the New York Custom-house, for the Washington Public Library, and for the Nassau County Court-house are represented by the designs of Israels & Harder, and of Trowbridge & Livingston. Lord, Hewlett & Hull send strong and thoroughly French plans for the Wilkesbarre Court-house; and finally there is a carefully rendered perspective of the successful design, by Andrews, Jaques & Rantoul, for an enlargement of the Court-house of Worcester County, Massachusetts. The Greek Classic of the older parts of the building sets the key for the new work, and its severity is refreshing after the cartouches and appliqués of the French Classic. It is encouraging to have, at last, the drawings for a monumental bridge, of which America has so lamentably few; namely, that over the Charles River, by Wheelwright & Haven. The design is evidently not yet thoroughly studied, but it shows what the reality will be.

One feature of the exhibition is the increased number of photographs illustrating the various buildings lately erected. Evidently, architectural sketches are distrusted, and photographs are supposed never to lie: it seems as if in a few years a series of photographs of the actual building, together with drawings of the ground-plans, will be the usual exhibit. Such a series is that of the Free Museum of Science and Art of the University of Pennsylvania, by Wilson Eyre, F. M. Day & Brother, and Cope & Stewardson, associated architects. F. M. Day & Brother exhibit also a similar series of views of a house on Locust Street, Philadelphia; Cope & Stewardson have two water-color perspectives of parts of the University of Pennsylvania dormitories now being erected, and Wilson Eyre a number of his strongly characteristic chalk and water-color drawings for houses and gardens, and one of a Memorial Hospital at Montague City, Mass. The work of these men is entirely uninfluenced by modern French design, and they form the nucleus of a Philadelphia group which still holds out against it.

Among other drawings are Cass Gilbert's Agricultural Building at the Omaha Exposition, Peabody & Stearn's Horticultural Building at the Buffalo Exposition, Cram, Goodhue & Ferguson's Church at Cohasset, and Rankin & Kellogg's Post-office and Custom-house at Camden. Then there are photographs, perspectives and details of various buildings by Field & Medary; Adin Lacey; Wm. L. Price; D. K. Boyd, and L. V. Boyd; Duhring, Okie & Ziegler; F. E. Mann; John Molitor; Schermerhorn & Reinhold; Spencer Roberts; Eden Smith; Maginnis, Walsh & Sullivan, and Winslow, Wetherell & Bigelow.

The English architects have responded most cordially to the invitations for the Circuit Exhibition, so there is an exceptionally strong representation of their work. Ernest George & Yates send drawings of Edgeworth Manor and of several stone and wood bridges, typical renderings by Ernest George himself; John Belcher, a house at Pangborne and two interiors of the Guildhall at Cambridge, — one of these a masterly line-drawing; Harrison & Townsend an entrance to a Devonshire house, Beresford Pite, town-halls at Cardiff and Colchester; and Arnold Mitchell; Edgar Wood; W. H. Seth-Smith; E. W. Mountford; C. J. H. Cooper; G. Aitchison; Thomas Davison; Rogers, Bone & Coles; F. S. Taylor; F. I. Thomas; and Ernest Newton, various houses and churches. From France, Tony Garnier sends a *projet* for a chimney in a hunting lodge, and L. Dumenil, a drawing of the door of the Hôtel de Ville, at Toulon.

Preëminent among the exhibitors of measured drawings and restorations of old work is the recently returned holder of the John Stewardson Memorial Scholarship, Wm. C. Hays. A. H. Brockie is the present holder, and his competition drawings and those of Lloyd Titus (First Honorable Mention) are here also. Hays's most interesting drawings include a careful restoration of the Palace of Domitian, on the Palatine, at Rome; measured drawings of a monument in S. Maria del Popolo, of the Church S. Lorenzo Fuori, and of the façade of the House of Tristan, at Tours. He exhibits his Paris *atelier* work and numerous sketches. H. B. Pennell, the Rotch scholar, has sent four studies of the great churches in France and Italy. They are something rather new in architectural work — exceedingly accurate drawings of exterior and interior decorations both in form and color. They are not in any sense sketches, but go into the minutest details in a way that shows a thorough and effective study of the subject. R. Clipston Sturgis, J. R. Pope, Oscar Enders, E. T. Boggs and G. S. Morris have sent sketches and small measured drawings of European work, and Arthur S. Brooke, several pencils and pen-and-inks of the Virginia Colonial Architecture along the James River. Then there is a good collection of T. Raffles Davison's work and two sketches by Walter Crane. Joseph Pennell has sent many of his wash-drawings and pen-and-inks, and, thanks to the Century Company, several of Harry Fenn's drawings are here also.

Of the architectural schools, Columbia, Cornell, the University of Pennsylvania, and the Drexel, Pratt, and Carnegie Institutes send designs and scale-drawings. Among these are several most commendable India-ink drawings by the students of the University of Pennsylvania and Drexel Institute, sent to be passed upon for entrance to the T-Square Club. The École des Beaux-Arts is represented by F. E. Perkins and J. H. Parker. Two competitive designs for Cornell's new students' club-house are sent by Hubbell & Benes and S. R. Davis, alumni of the college.

Year after year the scope of the exhibition is broadened. Now, not only architecture but all manner of subjects allied to architecture are eligible; in fact, almost everything which necessitates art in the designing. Landscape-gardening is represented by Olmsted Brothers and Beatrix Jones; stained glass by d'Ascenzo; decorative drawing by Maxfield Parish, F. C. Brown and Ellen Macauley; furniture by Bissegger; interior decoration by the Chapman Company, Petry & Bazin, Supplee & Farady; and C. R. Ashbee, of London, contributes wrought-iron work, both architectural and unarchitectural, and even jewelry.

To David Knickerbacker Boyd is due the success of the catalogue. It is in a more durable form than any preceding, and careful selections have been made of the subjects for reproduction. The catalogue is preceded by a tribute to the memory of Adolfo Carlos Muñoz, a Philadelphia architect, whose sudden death took place on November 10, 1899.

It is undoubtedly one of the best exhibitions, and effectively hung. As we look back in review, an interesting and reassuring fact is clear — that although most of the best-known architects of the other American cities are inadequately represented, or not represented at all, nevertheless the general tone is well up to that of preceding years. With the exception of the University of California drawings, there are none which attract the attention of all to themselves; but owing to the superior quality of the general work the average is higher than ever. The younger men fill the places left vacant by the older firms, and all goes steadily forward. The different styles are still at war, but gradually composition is rising in importance above accurately copied detail, as architecture approaches that long-desired millennium, when style will be a question of personal and national expression, and not of archæology. ALFRED MORTON GITHENS.

CORROSION OF WATER-PIPES BY ELECTRICAL CURRENTS.

IT is, no doubt, unfortunate, but, at the same time, equally inevitable, that the practical application of all new and advanced scientific principles in the interest of the comfort, convenience, and welfare of the community at large, should be invariably accompanied by a certain number of drawbacks or obstacles, which must be either removed or nullified before any real progress can be recorded. The exercise of a considerable amount of patience, ingenuity, invention, and skill is frequently demanded before the way is cleared; but the attempts in the long run are pretty sure to be successful. In the development of electrical railways and tramways a new source of apprehension and disquietude has arisen which, if not checked, may be fraught with grave consequences to all pipes of metal laid beneath the surface of our roads, streets, and the thoroughfares of all our towns and cities. The whole question, sufficiently indicated by the title of our article, has now assumed a phase which calls for public attention and consideration, and, consequently, in the following brief account we bring the matter to the notice of our readers. As some proof of the urgency of the case, it may be mentioned that the evil has attained to such proportions in the United States that an electrical expert of eminence has been specially appointed to investigate and report upon the whole subject. He has also been instructed to ascertain, as far as possible, what measures should be adopted to mitigate or entirely prevent the present damage by corrosion to underground metallic pipes by the action of return electrical currents. It will not be necessary for us to refer to any purely technical details in our short *résumé*, but simply to allude to the general principles of electricity with which all are now familiar.

It was about eight years ago that, in the city of Boston, in the United States, the effects of the electrolytic action of the return current of electric tramways was observed for the first time upon the leaden pipes in which telephonic wires were laid. Some years later, in Brooklyn, upwards of three hundred miles of similar lead-piping were so seriously attacked that they became perfectly useless, and had to be removed.

It is well known that in, for instance, an ordinary electrical tramway belonging to the overhead or trolley-system, the current starts from one of the poles of the dynamo, and follows the course of the overhead wire until it arrives at the tramcar. Passing downwards towards the axle of the wheels, it sets the motor in action, and then using the rails as its home conductor finally returns to the opposite pole of the dynamo from which it started. So far, everything is quite satisfactory, and confirms a well-recognized fact, that the simple transit of an electric current through metallic water-pipes is not *per se* productive of any injury or damage of any kind. Were this statement not fully established, electric tramway companies would never have been allowed, as they have been by the municipal and local authorities of towns, to use, when they wanted, the water-pipes as return conductors for the current. Here is where the mischief comes in. When the return current is passing along the rails, it constantly occurs that it, or at least a portion of it, deserts its natural conductor, the rails — so to call them — leaves its normal circuit, and attaches itself to any underground conductor that may accidentally come in its way. This abandonment of its proper conductor and the taking up of another not in connection with its own normal circuit will, in many cases, give rise to electrolytic action, attended with corrosive deterioration. It appears that a very small difference of potential is required to enable a current to pass from one conductor to another through an intervening space, particularly if the ground be of a damp description.

In addition to the existence of the underground currents themselves, electrolysis and corrosion will not take place without the active interference of other agents. The presence of soluble salts, consisting chiefly of the nitrates, the sulphates, and the chlorides, is imperative, and the magnitude and intensity of corrosion produced depends not only upon the strength of the current, but also upon the proportions in which the salts are present in the soil. It frequently happens that a very small quantity of the salts is sufficient to start the evil, which will continue contemporaneously with the existence of the current itself. The corrosive effect that the nature of the soil in combination with the electric current has upon metallic pipes is well evidenced by the fact that in Kansas a length of pipe, 6 inches in diameter, when taken up was found to be so terribly corroded that it was easily cut through and chopped up in pieces by an ordinary knife. In this district the deterioration of the pipes proceeded at such a rapid rate that in many localities the pipes were renewed nearly every six months. Up to recent date it has usually been taken for granted that the electrolytic corrosion of pipes was restricted to their external surface; but subsequent experiments have disproved this fallacy, and the existence of internal corrosion is thus accounted for. At the joints of the pipe, owing to the greater thickness and the greater amount of metal, the resistance to the transit of the current is increased, and becomes much stronger than that of the body of the pipe. When it arrives at a certain intensity, the current, in attempting to pass from one part of the pipe to the other, seeks naturally an alternative and less-resisting path which is open to it, either *viâ* the soil, or the water in the pipe. If then, as often occurs, the water flowing through the pipe should contain even a minute quantity of the soluble salts already enumerated, electrolysis supervenes, and the damage is effected in the interior of the pipe as well as on the exterior, on the assumption that a part of the current might pass by the one route and the remainder by the other. In support of this statement, which is no doubt perfectly accurate, it may be mentioned that a very careful inspection and examination of several lengths of pipes in Brooklyn, where the water is singularly destitute of soluble salts, detected no signs of internal corrosion. On the other hand, at Kansas City, a locality in which the water supplying the population is rich in salts, pipes 6 inches in diameter were found quite incrusted on the internal surface. To such an extent was the corrosion carried that when some of the pieces chipped off were submitted to analysis, they were found to contain 23 per cent of carbon, whereas the normal proportion varies between 2 and 5 per cent. It is obvious that this great surplus quantity of carbon must be accompanied by a corresponding reduction in the metal, due to electrolytic action.

A crucial test was undertaken, which may be considered as both conclusive and unimpugnable. A piece of perfectly clean and unused tubing 4 inches in diameter was placed in a bath impregnated with soluble salts, and a current of 20 ampères passed through it. At the end of three or four hours the corrosive influence was strongly apparent, and the parts attacked evinced 80 per cent of carbon. Some valuable and interesting experiments were also made with the object of ascertaining the actual ratio between the respective resistance of the joints and that of the body of the pipe. Without entering into the question of the electrical units employed, it will be sufficient to mention that the resistance of the joints was found to be a couple of hundred times greater than that of the pipe itself. Taken altogether, these facts establish beyond all possible doubt that internal corrosion does take place in water-pipes. It is also true that the process is considerably slower than when the deterioration attacks the outside, and it is, moreover, more difficult to detect; but, given a certain proportion of soluble salts in the water, and a sufficient resistance in the joints to the passage of the current, the one result is as certain as the other. Besides, from its comparative slowness of growth, and its insidious character, internal corrosion is really more to be feared than external, though each is in itself sufficient to account for an enormous amount of damage inflicted upon water-pipes. While there are certain remedial measures in the form of palliatives available for the treatment of the evil, there is only one real remedy which constitutes the moral of the whole subject — do not allow your water-pipes to be traversed by electric currents. — *T. C. in the Building News.*

BOOKS AND PAPERS

THE second edition of this excellent little manual[1] appears, not only extensively rewritten, but with almost twice as many plates as were contained in the first edition, the additions being half-tone plates, very well executed, of subjects having a rather unusual interest, as showing the sculpture in connection with the architecture which it adorns. It is hardly necessary to say that Professor Melani has the art of treating his subjects in a most attractive manner, and those who can read clear and simple Italian will find the text of his account of the sculpture of the early Renaissance extremely interesting, not only because of the discernment and knowledge with which he treats the noblest development of the art of sculpture that the world has, perhaps, ever known, but because the author, who is an original investigator of the most truth-loving and painstaking kind, disturbs many accepted notions in regard to the history of Italian art, and, while reinstating men of merit in their proper places, points out relationships, known or probable, which are often extremely curious. For example, speaking of the Florentine School of the latter part of the fourteenth century, he mentions that the second lateral doorway on the right-hand side of the Cathedral of Florence was the work of a German, from Freiburg, who was famous in his time under the name of Piero di Giovanni Tedesco, and points out that this doorway shows a naturalistic spirit, quite distinct from the style of other Florentine sculptors of the period, yet full of life and energy. The artists who succeeded this German were inspired to a certain extent by his works, and he thinks that this influence counted for something, at least, in the development of the school of sculpture of which Donatello was the great example. Between Piero, the German, and the school of Donatello came, however, another great artist, a native of Arezzo, named Niccolò Lamberti, but called, after the fashion of the time, Il Pela. This Niccolò Lamberti, or Pela, was an architect, as well as a sculptor, and Professor Melani calls him a "flower of art." He was impressed with the vigor of the work of his German predecessor in Florence, and, being entrusted with the sculpture of another doorway in the Cathedral, known as the "Porta della Mandorla," or Doorway of the Almond, he made it "one of the most beautiful ornaments of the Cathedral," by the lovely arabesques with which he surrounded it, displaying in them the richness of nature, directed by pure taste, which was afterwards to reach its culmination in the works of Ghiberti, Della Quercia and Donatello.

It seems that the work of Il Pela was highly appreciated in his time, for he was kept busy in Florence, and, when the Republic of Venice sent for him to work on the Ducal Palace, he was obliged to send his son Pietro in his place. Whether Pietro worked on the Ducal Palace or not, the documents do not show, but it is known that a certain Pela, a Florentine sculptor, and "son of Maestro Nicholò," was employed in Venice in the year 1434, in the ornamentation of the Ca d' Oro, and it seems altogether likely that this was the son of the sculptor of the Porta della Mandorla.

It must not be thought, however, because the author treats in such an interesting manner of the period which he has studied with so much care, that he neglects the other manifestations of Italian sculpture. On the contrary, the chapters on antique Italian art, in which are included descriptions of the sculpture of Etruria and Magna Græcia, as well as of Rome, are not only full of information, but contain the results of the most recent study. For instance, speaking of the Apollo di Belvedere, Professor Melani tells us that it is now tolerably certain that the statue now existing in the Vatican Museum is not, as has been supposed, an original, but a copy, probably belonging to the early days of the empire; that, instead of being found at Porto d' Anzio, it was really dug up at Grotta Ferrata, in a field belonging to Cardinal della Rovere, who brought it to the Vatican when he was made Pope; and that a head of Apollo, now in the Museum of Basle, in Switzerland, resembling closely the head of the Belvedere statue, but superior in style, belonged, very possibly, to the original of the Vatican statue.

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[1] "*Manuale di Scultura Italiana, Antica e Moderna*"; di Alfredo Melani. Second revised edition, with 24 woodcuts and 100 plates. Published by U. Hoepli, Milan. 5 francs.

PERHAPS a more tragic impression is produced on the tourist by the first sight of the Bay of Naples than by any other view in the world, unless, possibly, the first glimpse of Rome. It would seem as if the soft beauty of the long succession of islands and promontories by which the bay is enclosed called up, by contrast, the recollection of the horrors which the history of the Empire attaches to those lovely shores, while the cloud of smoke floating slowly away from the summit of Vesuvius, the most conspicuous object in the scene, brings to mind at once the three cities which sleep under the lava and ashes around its base. Of these three, we have begun to know something about one, and this one, although neither the largest nor the richest, has furnished for a century material of the deepest interest to the whole civilized world. To the study of this material Professor Mau brings what we may call a human sympathy which distinguishes his works from those of Sir William Gill and others, who have endeavored to reconstruct the ancient city in complete form, forgetting, as far as possible, its present condition. Twenty-five summers spent on the spot have taken the visionary element out of Professor Mau's views, and what he tells us is the story of a patient observer, familiar with all the theories relating to his subject, but disposed to fit his theories to the facts, rather than to adapt facts to what may seem to him a satisfactory theory.

Beginning with the history of the eruption by which Pompeii, Stabiæ and Herculaneum were buried, Professor Mau gives some interesting details, which have been brought to light by recent discoveries. The ordinary opinion, that Herculaneum, which was the richest and most important city of the three, was buried by a stream of lava, has been found, as he tells us, to be incorrect. The material which fell upon it was fine ashes and pumice, just like that which covered Pompeii and Stabiæ; but it was covered to a much greater depth than the others, excavations having been carried to a depth of sixty-five feet before reaching the pavement; and, although rain seems to have fallen in all cases with the ashes, the mass which covered Herculaneum appears to have brought with it a great quantity of water, for the ashes and pumice have solidified into a sort of stone, which is removed only with difficulty.

Another common notion, which Professor Mau disposes of, is that nearly all the inhabitants of Pompeii perished. It is known that the population of the city at the time of the eruption was about twenty thousand, and, as the position of the bodies of those who perished is indicated by characteristic hollows in the mass of hardened ashes, as well as by the bones left in these cavities or elsewhere, it is calculated; from the number of objects of this kind already discovered, that not more than two thousand persons perished in the city itself. No doubt, others, who had escaped to the outskirts, were overtaken by the storm of ashes, and it is known that several, who had gone to the waterside, died there; but it seems probable that five-sixths, at least, of the inhabitants reached places of safety.

What they left behind them, however, has done more than almost anything else to enlighten us in regard to the ancients and their ways. The Pompeians were originally neither Romans nor Greeks, but Samnites, who formed a colony on the border of Magna Græcia, and must have been strongly influenced by their more refined neighbors to the south, as well as by the rough, vigorous Romans to the north of them, and this mixture of influences has given to Pompeian art an extraordinary interest. The student of the subject, who has followed recent discoveries in the archæological journals, would hardly find anything new in Professor Mau's book[1]; but readers who have only a general knowledge of Pompeii, and would like to have that knowledge refreshed and extended, would be unable, so far as we know, to find any other book of reasonable size so full of accurate information, of learned but interesting comment, and appropriate illustration as this modest work of Professor Mau's. Nor should Professor Kelsey's part in the book be forgotten. It is not strictly a translation, but a new book, published only in English, and utilizing the manuscripts, drawings and other documents furnished by Professor Mau for the purpose. It is possible that the character of the material gave Professor Kelsey more freedom than he would have felt in translating a book already published in German; but however that may be, he has certainly succeeded in avoiding entirely the awkwardnesses which usually characterize a translation, and the English of his chapters is as clear and pure as possible. People who have tried to translate well from the German will appreciate the difficulty of the task, while those who are annoyed by the faults of ordinary translations will be grateful for a book which is perfectly free from them.

THE CHICAGO HIGH-BUILDING LAW. — Although it would be very desirable that the architects and builders of Chicago should have abundant and steady work, we very much regret to learn that a movement is on foot to so amend the high-building law as to allow the erection of twelve-story buildings, the present law fixing the height-limit at ten stories A truly wise and far-sighted policy would dictate, even for a wide-streeted city, a decentralization of business traffic rather than further concentration and congestion.

SOCIETIES

SKETCH-CLUB OF NEW YORK.

THE last smoker of the season was successfully celebrated on December 30, 1899, with a large attendance. The monthly competition due at that meeting was fairly attended, and a five-minute competition among the members present was enthusiastically entered by all.

ADOLPH MERTIN, *Recording Secretary.*

ILLUSTRATIONS

[*Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.*]

THE DEWEY ARCH, FROM THE SOUTHEAST, NEW YORK, N. Y.

FOR description see article elsewhere in this issue.

TOMB OF CARDINAL CETTI, IN THE CHURCH OF SAN PRASSEDE, ROME, ITALY.

THIS and the following plate are copied from Giacomo Fontana's "*Raccolta delle migliori Chiese di Roma e Suburbane.*"

TOMB OF DOGE ANDREA VENDRAMIN, IN SS. GIOVANNI E PAOLO, VENICE, ITALY.

PALACE OF DOMITIAN, ROME, A RESTORATION BY MR. WILLIAM CHARLES HAYS, SECOND HOLDER OF THE JOHN STEWARDSON SCHOLARSHIP.

ADDITIONS TO MAXWELL FARM, PINNER, ENG. MR. W. H. SETH-SMITH, ARCHITECT.

SKETCH OF HOUSE FOR STEPHEN PARRISH, ESQ., PHILADELPHIA, PA. MR. WILSON EYRE, JR., ARCHITECT, PHILADELPHIA, PA.

BLOCK PLAN OF NEW BUILDINGS FOR WASHINGTON UNIVERSITY, ST. LOUIS, MO. MESSRS. COPE & STEWARDSON, ARCHITECTS, PHILADELPHIA, PA.

[The following named illustration may be found by reference to our advertising pages.]

NO. 2 WEST DRIVE, STREATHAM PARK, S. W., LONDON, ENG. MR. LEONARD STOKES, ARCHITECT.

THIS plate is copied from *The Builder.*

[Additional Illustrations in the International Edition.]

THE DEWEY ARCH AND SOUTHERN COURT OF HONOR, NEW YORK, N. Y.

[Gelatine Print.]

EAST SIDE OF THE DEWEY ARCH, NEW YORK, N. Y.

[Gelatine Print.]

CONGREGATIONAL CHURCH, WILTON, ENG. MR. J. P. OSBORNE, ARCHITECT.

HEYTHROP PARK, CHIPPING NORTON, ENG.

NOTES AND CLIPPINGS

TO BUY THE CLIFF-DWELLINGS.—Mrs. Virginia McClurg has succeeded in her efforts to get a tangible plan by which Colorado clubwomen may possess the cliff-dwellings. The committee of which she is chairman now asks that clubwomen tax themselves twenty-five cents apiece to raise the sum necessary to carry out this undertaking. Other women — for there are a few of the "unclubbed" yet extant who have a personal pride in their State — may send their quarters also. Mrs. McClurg's address is No. 619 North Cascade Avenue, Colorado Springs. Wealthy individuals who have more than a quarter to spare will not be ruthlessly spurned, and even if the decimal should be placed after the figures, instead of before them, Mrs. McClurg will bear the news with becoming fortitude. — *N. Y. Times.*

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[1] "*Pompeii, Its Life and Art.*" By August Mau, German Archæological Institute in Rome: Translated into English by Francis W. Kelsey, University of Illinois, with numerous illustrations from original drawings and photographs. New York: The Macmillan Company. $6.

Ruined Cities in Cyprus. — Famagusta and Rhodes are probably the most wonderfully preserved of mediæval cities. Nothing in Europe can be compared with them. Both contain examples of the finest Gothic architecture in their old cathedrals, churches, palaces, and fortifications. It is a pity that they are not more known to the travelling public; perhaps if they were, some effort might have been made for their preservation. Famagusta is fast disappearing, thanks to the enterprise of the few natives who still inhabit its ruins. Port Said may be said to be built out of its stones, carried across to Egypt in little lighters. In Famagusta the stones are sold at the rate of fifteen Cyprus piastres, or one shilling and eightpence the hundred. The priceless old carvings of angels, saints, lions, and what not are roughly knocked off to render the stones square, and perhaps to avoid alarming the good people of Port Said. The Turk who keeps the general shop of the place and speaks a little French acts as agent. The more complete destruction of the city now contemplated is another matter. It is proposed to build a small harbor for coasting steamers within the shallow rocky port of ancient times. To effect this, the great walls of the city, which still stand in the most perfect preservation, as if abandoned but yesterday by the martyred Bragadino and his brave companions of 330 years ago, are to be utilized. That is to say, their materials are to be taken for the purpose of forming a new quay-wall for the tramway to run upon, and connect the landing-stage beyond the northern extremity of the city with the village of Varosha, which is situated about a mile and a half to the south. From this latter a tramway to Nicosia is to be commenced. It indeed seems a terrible evidence of poverty, both material and sentimental, that a country like Cyprus should be unable to afford to retain such a marvellous mediæval monument as the old city of Famagusta, a possession which in the future must certainly attract the art-loving tourist and the artist. The beautiful old sea-castle associated with the story of Othello and Desdemona, with its four round towers, on which the lion of St. Mark still stands sentinel, with the proud inscription of the Foscarini giving a date which seems almost incredible, considering the absolutely intact condition of the buildings, must be blasted away as ballast for a dock-tramway by English engineers. The Tower of London might as well be demolished to make way for a new Thames-side dock! — *London Times's Rome Correspondence.*

The Royal Vaults at Windsor. — During the imperial visit to Windsor Castle the German Empress inspected the interior of the royal vault underneath the Albert Memorial Chapel. During the last few months a new approach has been made to the vault, in order to facilitate the visits of the royal family, and the interior has been lighted by electricity, while an altar has been placed at the upper end. The old coffins, covered with crimson velvet, with gold ornaments and mountings, have all been enclosed in oak cases, and they are now placed on the shelves at the sides of the vault. Until within the last weeks the large stone table in the centre of the vault was covered with the coffins of George III, Queen Charlotte, and the Duke of Kent. This vault was constructed by George III, as a burial-place for himself and his wife and their descendants. The last interment was that of the Duchess of Teck. The old royal vault, in which Henry VIII and Charles I are buried, is underneath the choir of St. George's Chapel. There is something very pathetic in the brief entry in the chapel register which records the burial of the "Royal Martyr." It simply consists of five words, with the date, "King Charles, from the Castle." — *Manchester Gazette.*

The York Water-gate, London. — It is suggested that a tablet and inscription be placed on the old gateway at present preserved in the Victoria Embankment Gardens, London, and the Parks Committee of the London County Council has decided to ask the Council for sanction to set up a bit of oak with the following legend: "This gateway, formerly the water gate or approach from the Thames to York House, Charing Cross, originally the London lodging of the Archbishops of York, the birthplace of Chancellor Bacon, and afterward the residence George Villiers, the second Duke of Buckingham, was designed by Inigo Jones, architect (1572–1652), and executed between 1624 and 1628 by Nicholas Stone, master-mason (1582–1647), for the first Duke of Buckingham, and marks the river margin before the embankment was constructed. The inscription on the north frieze, 'Fidei coticula crux' (the cross is the touchstone of faith), is the motto of the Villiers family, whose arms are on the south front. By the London Open Spaces Act, 1893, the gateway was vested in the London County Council, who repaired the structure and took measures for its preservation *in situ* as an interesting landmark of London." — *N. Y. Tribune.*

Aluminium-wire for Telegraph-lines. — Expectation that the field for the use of aluminium in lines of electrical manufacture would be widened by the increasing price of copper are being realized. A Western railroad-company recently ordered 60,000 pounds of aluminium wire for its telegraph service, and the wire is being used with satisfaction in Pittsburgh for telephone purposes. It is also in use by some street-railroads as cables for the conduct of the electrical power. To obtain the same conductivity the aluminium-wire must be about twice as large as the copper-wire, but as the weight is much less, the strain on the poles is not so great, and it is said that with aluminium at twice the price of copper it will be as cheap a material. Thus, with copper at 20 cents per pound and aluminium at 41 cents per pound, the cost per mile for wire of the same conductivity in either metal will be the same. But as the cost of aluminium is constantly decreasing through the improvement of reduction processes, and the cost of copper is being held up, the outlook is thought to be favorable for the increased use of the white metal. — *N. Y. Evening Post.*

Worthless Timber Dry-docks. — Investigations ordered by the Navy Department have disclosed some rather surprising facts regarding the condition of the new Port Royal dry-dock, built there a few years ago at a cost of over $500,000. Recent reports show beyond question that this great dock, which was intended to be one of the finest on the seaboard, is practically wrecked, unserviceable, and fast going to pieces. It would not be safe to place the smallest vessels in the basin, and at the present rate of deterioration, it is not believed the dock will be worth anything in a few months unless money is expended to prevent its further decay. Admiral Endicott, under whose charge dry-docks are placed, estimates that the dock as it now stands is useless to the navy, and that it would be reckless to attempt the docking of any first-class ship in it. The defects seem to be due to faulty construction as well as design, and the marine-worm has also done much towards rendering the timbers weak and unsafe. The sides are bulging in, according to reports, water has come through the bottom, and defects are being constantly found, although the basin, when delivered to the Government three years ago, was believed to be the equal of any on the coast. The dock was authorized during the Harrison administration, and one of the last acts of Secretary Tracy was to award a contract for its construction to a Washington firm, whose experience in building operations was confined to houses. Trouble began at once, and the dock was delivered several months over contract time. When completed it was discovered that none but light-draught vessels could safely approach it, and battle-ships only under unusual tidal conditions for lack of anchorage-water near by. The first ship to enter the dock was the Indiana, which crossed the sill on a very high tide, and had to remain inside over a month before another tide allowed her to get out. Weaknesses were then developed in the dock, but of a trivial nature, and after that one of the monitors was docked, but no other ship has ever used it since then. Its uselessness is now apparent to Admiral Endicott, who will recommend that $500,000 be appropriated in order that the dock may be converted into a masonry basin and suited to the deepest-draught ships of the navy. It was urged at the time the dock was authorized that none but a stone dock should be located in Southern waters, where the marine-worm plays havoc with submerged timber. Admiral Matthews, then chief of the bureau, however, allowed the contract to be made, and the result is a loss to the Government of $500,000, the dock being regarded now as worthless unless a large amount of money is expended upon it. Wherever the marine-worm is found, only stone and masonry docks, Admiral Endicott asserts, should be built. He points to the dock at Norfolk, which has suffered from its attacks, and that at Mare Island, where the timbers have been eaten into until they are in many instances unsafe. None but stone docks hereafter will probably be built by the Government. They are more expensive than the timber, but last longer and suffer little deterioration. — *Washington Correspondence, Baltimore Sun.*

Servants in Flats. — The domestic servant question, from *The Lancet's* point of view, is one of hygiene, especially in flats. The number of rooms in each of these flats being, except in the very largest, not great, it becomes an important matter to make the utmost use of all available space. Naturally, domestic servants are the first people to suffer with the commencement of this squeezing process. The position of their bedrooms is determined by expediency, and the general practitioner who visits a number of patients dwelling in flats becomes acquainted with an amount of sleeping accommodation in kitchens, pantries and cupboards which he never suspected and of which he most seriously disapproves. It is difficult to imagine a state of things less conducive to hygiene than that to be found in a flat where the cook's bedroom is little more than a dark cupboard opening out of the kitchen. If the proximity of the bedroom is not inimical to the products of the kitchen, at least the proximity of the kitchen menaces the health of the occupant of the bedroom. In all probability the purity of both apartments suffers, and, indirectly, the master and mistress suffer too, for if their cook slept rather farther off from where she works, probably both food-stuffs and culinary operations would be improved. In flats with high rentals, too, the manner in which the servants are located is often most unsatisfactory from a medical point-of-view. In such cases the basement, very likely below the level of the street, inefficiently ventilated and receiving scarcely any daylight at all, is given up to the accommodation of two necessaries, coals and servants.

The Paris Underground Railway Collapse. — The London newspapers contain some interesting details of the recent collapse of a part of the Paris Underground Railway. The scene of the disaster was the Place de l'Etoile, but a stone's throw from the Arc de Triomphe. A little after eight o'clock a section of the tunnel, which is sixteen yards wide, caved in, leaving an enormous chasm in the middle of one of the most frequented thoroughfares in the capital. According to eye-witnesses, the spectacle offered was extraordinary. The only warning of what was about to happen was an ominous rumble, immediately followed by a shock as of a slight earthquake. The trees, of which there are many at this spot, swayed backwards and forwards wildly, and the lamp-posts rocked from side to side. Then trees, lamp-posts, and roadway were engulfed in a yawning pit, from which there at once shot up a gigantic sheet of flame caused by the gas, which was pouring out from the broken pipes. The immense excavation was thus converted into a kind of giant punch-bowl. To the general astonishment it was found that only two persons had been injured, neither of them fatally. Of the fifty or sixty workmen at work in the tunnels branching off from that which had fallen in, not one was hurt. A slight settlement had been noticed in the tunnel earlier in the evening, and the engineers had, fortunately, given orders for the work in it to be suspended. M. Berlier, the engineer, ascribes the catastrophe to the fact that the general level of Paris is only eight metres above the water-level, while the depth of the railway tunnels varies from ten to twenty-six metres. He thinks that the pressure to be sustained had not been rightly calculated. The accident excited much interest in London, where underground railroads are so common. — *N. Y. Evening Post.*

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HARVARD UNIVERSITY has established a four-year course in landscape-gardening, in connection with the Lawrence Scientific School, leading to the degree of S. B. The course will include the study of architecture, the artistic treatment of natural forms, and practical horticulture and arboriculture, for which the Bussey Institution and the Arnold Arboretum will afford admirable facilities. To the thoughtful man, the prospect that the other great universities will follow, as they usually do, the lead of Harvard, in adding to the course of study which they offer, suggests the possibility that the profession of landscape-gardening, which counts at present about as many practitioners as can find employment in this country, may become overcrowded, as that of architecture is in great danger of being, if it is not already so; but it is to be remembered that a man who has thoroughly studied architecture or landscape-gardening, even though he may be obliged to gain a living in some other career, can exert an important influence in favor of good art in the community in which he lives, and it is just this awakening of communities to the difference between good art and bad art, or no art at all, which is most needed now to develop that love of the beautiful for which America, more than any other country in the world, is now ready, and which is likely in the next generation to furnish employment and fame to all artists who may deserve them.

IT is interesting to learn that the Supervising Architect of the Treasury has been obliged to apply to Congress for an increase in the appropriations for the public buildings under his charge, on account of the rise in prices of materials, which he estimates at an average of thirty per cent. As the office estimates of cost for public buildings, on which the appropriations are based, are made with an exactness which would surprise people not familiar with Department routine, it is quite natural that the rise in prices, since the estimates were made, should find the appropriations insufficient; and Mr. Taylor's opinion, that the average cost of materials is thirty per cent greater now than it was a year or two ago, is entitled to notice as the most serious, and probably the most accurate, estimate that has yet been made. As the increase of appropriation asked for will affect about one hundred and thirty public buildings, which are to cost about twenty million dollars, the additions needed will form a matter of some importance; but the Congressional Committee seems to have concluded, very sensibly, that they must be made. It is quite possible, however, that the appropriation, when it comes up for a vote, will form the text of an interesting debate; and an intelligent man, intent upon distinguishing himself as the enemy of trusts, might find the substance of an effective speech in the history of those which control the manufacture and sale of certain building materials.

THE science of engineering has suffered a great loss in the death, at the early age of fifty-four, of Alfred Brandt, the engineer and contractor for the Simplon Tunnel, and the inventor of most of the important improvements which have been made in processes and machinery for tunnelling within the past twenty years. Brandt was a native of Hamburg, although he was a pupil of the Polytechnic School at Zurich, and spent much of his life in Switzerland. After his graduation from the Polytechnic School he was employed on the Hungarian railways, but before long he was called back to Zurich, as mechanical engineer in the central office of the St. Gothard Railway. Here he displayed so much ingenuity and mechanical intuition in solving the smaller problems which came up in the office that he was sent to Airolo, to study the machinery in use there for excavating the great tunnel from the Italian side. As every one knows, the drilling machines employed at that time were operated by compressed air, power for compression being taken from waterfalls in the neighborhood. Brandt soon saw that in the heating of the air by compression, and the subsequent cooling, there must be a loss of energy, while the conversion of the power from mechanical force into the latent force of compressed air, and its subsequent revival as mechanical action, involved, in practice, a further loss, and he set himself to devise means of using the hydraulic power directly in the drilling machines without the intervention of compressed air. He submitted his scheme to the chief engineer of the railway company, who authorized him to have a machine constructed from his designs. When completed, the new machine proved very efficient, and Brandt added to it a device for changing the operation of the drills, with little modification in the apparatus, so as to substitute rotary for direct-acting tools at pleasure. Just as this invention was complete, the St. Gothard Railway Company fell into financial difficulties, and the work on the tunnel was stopped. Brandt, thus left without employment, resolved to make a venture as a contractor, using his knowledge of tunnel engineering, with his new drilling machine, to earn him a living. He associated with himself his friend and college associate, Karl Brandau, of Cassel, and the firm of Brandt & Brandau was soon overwhelmed with business. In the Arlberg, in Thuringia, Istria, Italy and Spain, in the coal-mines of Westphalia, and in the Caucasus Mountains, the Brandt machines were set at work under the supervision of their inventor, whose energy and enthusiasm, as well as his success, soon made him famous. It is said of him that in a difficult piece of tunnelling, where the men worked night and day in three shifts, he always saw every gang at work. The project of the Simplon Tunnel, the greatest, and perhaps the last, of the Alpine tunnels, gave him the opportunity that he wished for. No other firm could probably have competed successfully with Brandt for the contract, even if the renown of his establishment had not pointed him out as the one to whom it should be entrusted; and, from the first, it was put into his hands. There were long and annoying delays before the work could actually be begun, but the contracts were at last signed, and excavation began with energy. Brandt hired the Stockalper Castle, at Brieg, well known to tourists, and brought his family there, to live close to his work until it should be completed, saying that he would rather die himself than have the tunnel delayed beyond the contract time. Here, however, his wife and daughter fell ill of typhoid fever, and anxiety about them, added to his business cares, told even upon his determined energy. Before they were entirely recovered he was attacked by apoplexy, and died a few days later.

MR. F. T. DOLLMAN, who died a few days ago in England at the age of eighty-seven, was perhaps the last of the great group of draughtsmen who did so much to revive the mediæval style in England and elsewhere. Mr. Dollman was a pupil of Pugin's, as enthusiastic a lover of English

Gothic as his master, and a much better draughtsman; and his books on "*Examples of Ancient Pulpits in England*" and "*Examples of Ancient Domestic Architecture*" were quite worthy to be found, as, indeed, they generally are, on the shelves of the libraries of elderly architects, side by side with those of Rickman, Pugin, Scott, Brandon, Prout and the others whose fame as artists will long be secure, whatever fashion may say to the style which they loved so well.

THE Annual Report of the Architect of the United States Capitol contains an interesting account of the explosion and fire which occurred in that building about a year ago, badly damaging the rooms under and near the Supreme Court-room, and destroying the decorations in the court-room itself. Soon after the fire, Mr. Glenn Brown was employed to investigate the structural damage, to test the cracked walls, and make such recommendations as he might deem necessary; while Professor Charles E. Munroe, an expert in explosives, was commissioned to study the causes of the disaster. It was ascertained, practically beyond question, that the explosion was due to the escape of gas in the basement, at a time when the pressure in the mains had been temporarily increased to more than double the normal amount. Some of the gas probably escaped through a governor, which had been left improperly adjusted, but Professor Munroe thinks that leaks in the pipes, some of which have been buried under the cellar floor for nearly forty years, and have been tapped for new branches in various places, may have added materially to the amount which collected in the cellar. When gas enough had accumulated to form an explosive mixture with the air, it was at once fired by one of the numerous lights burning near, and exploded with such force as to blow out the brick vaults of the floor overhead, and even to dislocate the stone jambs of a doorway at some distance. The cellar being encumbered with combustible rubbish, fire soon followed, and spread to the story above, burning out the room of the United States Marshal, and breaking the skylights of the Supreme Court-room, but, fortunately, not setting fire to the furniture there. The investigation, besides ascertaining the cause of the explosion, and the necessary steps to be taken to restore the building to its former condition, showed incidentally the existence of a large number of disused drains under the cellar floor, any of which, as Mr. Brown pointed out, might conduct gas from a broken main outside into the Capitol, and cause another explosion, worse than the first; while some of the drains would even admit the passage of men with evil intent. The two experts therefore united in advising that all "vagrant" pipes and drains should be immediately removed, and their place filled up; and that drain-pipes still required should be exposed to view in trenches, nothing being left buried under the floor.

THE Municipal Art Society of New York gives notice of a competition for a Refuge, or Transfer Station, to cost not more than five thousand dollars, and to be placed at the Central Park terminus of the Broadway line of the Metropolitan Traction Company, at the junction of Seventh Avenue and Fifty-ninth Street. The competition is to be carried on under the rules of the Society, and three prizes are offered, the first being three hundred dollars in money, the second two hundred, and the third one hundred. Whether any of the designs will be executed is doubtful, but the Society will "warmly recommend" the carrying-out of the design placed first. Further information may be obtained from Mr. E. Hamilton Bell, 424 Fifth Avenue, New York.

THE Twenty-second annual Exhibition of the Society of American Artists will open in New York on Saturday, March 24, and continue until Saturday, April 28. Original works in painting and sculpture, not before publicly exhibited in the City of New York, and approved by the jury of admission, will be received, and must be delivered without packing-cases, at the Fifty-eighth-Street entrance to the galleries of the Society before 5 p. m. of Friday, March 9. The Shaw Fund of fifteen hundred dollars will be devoted to the purchase of a figure composition painted in oil by an American artist, to be selected by the jury; and the annual Webb prize of three hundred dollars for the best landscape in the exhibition painted by an American artist under forty years of age will also be awarded by vote of the jury. Further information may be had by addressing the Society of American Artists, 215 West Fifty-seventh Street, New York.

THE final juries for the selection of American works of painting and sculpture for the Paris Exposition have been appointed, that for painting being composed of Messrs. E. A. Abbey, J. W. Alexander, W. T. Dannat, Alexander Harrison, Gari Melchers, F. D. Millet, John S. Sargent and Jules Stewart; while that for sculpture consists of Messrs. Paul W. Bartlett, Frederick MacMonnies, A. P. Proctor and Augustus St. Gaudens. We need hardly speak of the distinction of these gentlemen, all of whom have won fame for American art, but it is a pleasure to call attention to the care with which Mr. Cauldwell has made his selection, so that his juries may represent, not only the highest attainment in art, but the different tendencies of American work. With Messrs. Abbey, Millet and Sargent, although all three are probably equally open to the appreciation of good art in any form, the competitors who have been brought up in the black-and-white, the pure Classic, and the impressionist faith will find their motives and their efforts perfectly understood; while the Parisian element will represent the middle ground in which American, as well as French art, moves most safely. Among the sculptors, it would have been hard to find four men who are known to the public as combining more knowledge with more conscientiousness than those appointed, and the only regret that Americans, among whom sculptors of the first class are not very numerous, will feel at the selection is likely to be that so many of their best men, as members of the jury, will, presumably, be debarred from the competition for the honors in which their fellow-countrymen would share.

WE are always rather reluctant to advise any one to read Mr. Ruskin's works, and still more to give any one a gratuitous advertisement; but, seeing that Wanamaker, in New York, sells some of Mr. Ruskin's books for eighteen cents a volume, we are disposed to point out to our younger readers that it would be worth their while to buy certain of them. Undoubtedly the most useful of all the Ruskin books is the "*Elements of Drawing;*" and it is not too much to say that every architectural draughtsman should own a copy of it and practice diligently the exercises which it describes. The late Charles B. Atwood, one of the most skilful and rapid draughtsmen that ever lived, who, it will be remembered, made his prize set competition drawings for the New York Municipal Building in less than a day, gained his unrivalled precision of eye and hand in great part through his practice of the exercises in the "*Elements of Drawing,*" which, as he once told us, he considered the most valuable book that an architectural draughtsman could possess. Mr. Atwood was not a person of romantic or transcendental disposition, at least so far as his business was concerned; but, whatever he may have thought of Mr. Ruskin's views of political economy or of architectural lamps, he recognized in the "*Elements of Drawing*" the thoroughness and concentrated knowledge which make it the best treatise on the subject ever published. Next to the "*Elements of Drawing,*" Ruskin's most useful book is the "*Aratra Pentelici,*" a treatise on sculpture which is invaluable to the architect. This, unfortunately, does not appear in the cheap edition, but it is well worth whatever it costs. Apart from these very practical books, which every one can read with profit, and the children's books, such as the "*King of the Golden River,*" "*Ethics of the Dust,*" and "*Sesame and Lilies,*" which every girl, at least, should be familiar with, there are some which, if read with discrimination, are full of inspiration and encouragement to the artist; but, if read without discrimination, favor the development of the most abominable conceit and incapacity for intelligent judgment that has ever afflicted the artistic world. Among these the best, and also the worst, is probably the "*Lectures on Architecture and Painting,*" which figures in the Wanamaker editions at eighteen, and, also, in smaller form at fifteen, cents. He must be a thick-skinned artist who can read this book without being inspired with noble sympathies and resolves; yet no book ever written contains more rubbish, which even its author could not have believed, or teaches more recklessly the doctrine of contempt and hatred for one's professional brethren. The "*Seven Lamps,*" which is incomprehensible to some students, but inspiring and valuable to others, does not appear in the Wanamaker list; and the "*Stones of Venice,*" the best studied and most thoughtful of all Mr. Ruskin's architectural works, is represented only by a small volume of selections.

THE DEWEY ARCH.[1] — II.

THE mere record itself is a formidable document, including the name of nearly every well-known sculptor living in New York, with a goodly representation of the younger men, whose work bids fair to increase in importance with each new effort. As an epitome of current American sculpture, the arch is without rival; as a free-will thank-offering and tribute to greatness, it has no peer in the history of the world. But the sculpture of the arch represents much more than the selection of a certain number of subjects and the designation of the artists to execute them. It it an epitome of American history, and a carefully-thought-out scheme, in which history and allegory, suggestion and representation, the nation and the city, are included in a thoroughly-welded entity. The arch being erected in honor of the foremost living American naval hero, it symbolized the power of the United States as a naval nation, Mr. Ward's great group of "Naval Victory" appropriately crowning the structure. Its central figure of "Victory" dominates the arch, as well as the entire decorative scheme. The figures of "Victory," by Mr. Adams, are placed against the columns of the colonnade, and farther up Fifth Avenue the National Society of Mural Painters exhibited inscriptions of the American vessels that won such splendid victories in the war, for whose successful end the arch was built.

The great pier groups are not only emblematical of American character, but sum up and illustrate the whole history of war as interpreted by the American people. The series begins with the north-east group, Mr. Martiny's stirring "Call to Arms." Next, on the south-east pier, Mr. Bitter's intensely vigorous "Combat," — a group not reeking of the battlefield, nor saddened with the dead and dying, but vigorous and alert, — the American in defence of his country; then the stately "Triumphal Return" by Mr. Niehaus, on the south-west corner, and, finally, the supreme theme of life itself, the "Peace" by Mr. French. A fine conception truly that thus brought the happy end, the joys of domestic life, in deliberate contrast with the beginning of the fight, and enshrined them both on the same great monument. For the great lesson of war is peace; and the admiral in whose honor the arch was built and his own home-coming gave visual evidence of its truth. And, so, in amplification of the same thought of peace and prosperity are the side panels, — the "Protection of Our Country," by Mr. Couper, and the "Progress of Civilization," by Mr. Gelert, — both eminently appropriate for an American naval memorial, both themes that would scarce have found place on a war monument of a more warlike nation.

The American nation has been peculiarly fortunate in the naval battles that have brought it renown in its wars. The three periods of 1776, 1812 and 1861 find fitting place on a monument erected to commemorate the latest American triumph in this branch of warfare. Commodore Paul Jones stands for the War of the American Revolution. Commodore Hull, Commodore Decatur, Commodore Perry and Commodore McDonough stand for the War of 1812. Admiral Farragut, Admiral Porter and Lieutenant Cushing represent the Civil War.

Here, again, was admirable appropriateness. Naval history is not achieved by allegory, but by personality; so the effigies of the nation's past heroes find fitting place on the monument to the great living hero of the service. The names of these naval heroes were suggested by Secretary Long of the Navy Department. The statues supply that personal element, that definite reference to history, without which a monument ceases to be intelligible; and their position on the attic, where they carry up the lines of the columns to the summit of the arch, is dignified and logical. The eight figures are sufficient in number to honor the greatest of American naval heroes; their position gives them place on the monument in an extremely happy manner. The personal side of the American Navy is further illustrated in the memorial medallions placed in the spandrels of the side transverse arches, where the portraits of some of the lesser men help to illuminate this splendid naval monument. Both symbolism and personality are, therefore, amply illustrated on the arch itself. Fortunately for art and for the sake of the sculptors, it is the former that predominates. But the allegory is at all times intelligible, penetrating and admirable, a circumstance so notable in works of this description as to be worthy special mention.

The arch typified and expressed a naval victory that vitally concerned the whole country, — a country whose shores were washed by the Atlantic and Pacific Oceans, and whose responsibilities, as resulting from the war, had extended to the East and West Indies. Symbolic figures of the two great seas, then, found place in the north spandrels of the arch, while the corresponding spaces on the south side were filled by figures of the "North" and "East Rivers," the two waterways that bound the shores of the metropolis which was welcoming the victorious admiral. On the north, at the entrance of the Court of Honor at which the admiral was received, were groups representing on the one side the "East Indies," and on the other the "West Indies," thus symbolizing the new dependencies of the nation, and appropriately placed at the threshold of the Court of Honor. On the farther side, at the south entrance of the colonnade, were groups representing the "Army" and "Navy," the two branches of the military service. And, finally, to emphasize the victorious purpose of the monument, there was not only the majestic group of "Naval Victory" on the summit of the arch, but figures of "Victory," by Mr. Herbert Adams, were placed against the coupled columns of the colonnade facing the Courts of Honor. The whole plan was admirably conceived, the statues and reliefs were well chosen, and the themes of the sculpture of the arch and its approaches afforded fine opportunities for artistic interpretation.

In attempting to form an artistic estimate of the value of the arch its temporary character must be recognized at the outset. Strictly speaking, it is not a work of sculpture at all, but a full-sized sketch, developed with unusual care, executed with an unusual attention to detail and effect. The fact that it formed the chief decoration for a triumphal procession has nothing whatever to do with the artistic character of the sculpture. It is not permanent sculpture we are called upon to view, but temporary sculpture, sketched at the beginning in a necessarily hasty manner, developed in many instances without that constant supervision by the master which every sculptor gives to his work, and brought to completion in an unprecedentedly short space of time.

Is its value less because of these unusual circumstances? That is not the question. The real point at issue is not, Wherein does his art fail? in what is it wanting, or how conspicuous are its shortcomings? But, most decidedly, how excellent it all is, and how admirable! We do not, fortunately, need to force ourselves to admire it, for it appeals to every one by the beauty and dignity of the whole. It is not a perfectly digested work. It is not accurately balanced. It has errors that, were it to be done over again, would be instantly corrected. But when it is remembered that it is but a sketch in reality, that no opportunity was given to any of the sculptors to materially modify any part of his work, and that only a relatively slight supervision could in any case have been given it, the faultfinder — if there be such a person in this connection — cannot expect to win any considerable number of supporters. The pessimist has no place before the Dewey Arch.

The proper spirit in which to view this structure and its adornment is one of intense satisfaction that so fine a work was produced under such extremely difficult conditions. It is a most unfortunate fact that we do things in this country in too great a hurry, and the success of the Dewey Arch bids fair to demonstrate that even great things in art can be accomplished in a hurry. It would be unfortunate if such an impression should win general credence, for if there is any phase of human activity that requires extended and uninterrupted time it is the production of a work of art. Time, however, was the one element that could not enter into the designing of the arch. Its real success, in view of this fact, is nothing short of amazing.

It must not be inferred, however, that the arch was without its genuine successes in art, or that it is necessary to excuse shortcomings at every point, because of lack of time or its temporary character. Its sculpture is, absolutely as well as relatively, of a very high quality. It is quite beside the mark, that no doubt each sculptor, now his sketch is in place, would introduce changes that had not occurred to him at first. There would be an adjustment of scale; perhaps in one or two instances a more complete grouping of the figures forming the groups, — just the things, in fact, that any sculptor would do in his studio had he there brought his study to an equivalent state of advancement.

It was indeed a stirring sight, the last few days before the land parade, to see the great open-air studio in Fifth Avenue, with the busy sculptors and assistants eagerly engaged in their patriotic work. Never before, we may be assured, did Mr. French and Mr. Bitter, Mr. Ruckstuhl and Mr. Adams, Mr. Lopez and Mr. Konti and Mr. Martiny appear in the public highways clad in their studio costumes, — Mr. Bitter in a pick jacket, Mr. French and Mr. Adams in white, Mr. Martiny in his beloved blouse, — and give the finishing touches to their work under the eyes of an admiring throng that crowded the street and sidewalk within seeing distance, — a throng so great that even the hardy truckman and the impatient motorman, for once in their lives, yielded to the citizen on foot. Even the completed arch itself does not speak so eloquently of the patriotism of the sculptors as did the scaffolded structure a few days before the end. Verily those were great days for art in New York, and we may be sure both artists and sculptors enjoyed it hugely.

But what is the meaning of it all? Is it simply that a noble piece of public decoration was put together in an incredibly short space of time and set up in the most conspicuous situation in New York? Does it mean simply that a certain group of men were so enthused by the great wave of patriotism that swept over the land on the return of our victorious admiral as to put forth their efforts in the accomplishment of an unusual task? It was very much more than either of these. First and foremost is the great fact of coöperation among artists in the creation of a single work. It would hardly be possible to exaggerate the significance of this fact. It is a fact of supreme value both for the public and for the artists. It has shown that, great as is the power of individuality, the power of union and coöperation is far greater. Artists have found they could work together in a task of great magnitude and emerge from their labors with their individual reputations enhanced through the very coöperation that they feared would hurt them. They have found an added strength in unity, and they are not likely to forget the lesson. The completed arch is a much greater and much more interesting and a much more valuable work because of this coöperation than had any one artist carried it out individually.

This in itself is of more value than a hundred arches, and its influence on American art is destined to be very great. Artists have found it possible to do more important work together than they could ever have hoped to accomplish singly; and not only to do that, but to increase their individual reputations. It has been proved that the seclusion of the private studio is no longer necessary to the accomplishment of notable things in sculpture. We are likely, therefore, to have more and more examples of this delightful brotherly work, and the sequel cannot but be helpful in very many ways.

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[1] Continued from No. 1255, page 12.

Another important fact is the value of a definite idea taught by the arch. It is true that the original offer of assistance made by the Society to the city officials did not suggest a definite scheme, did not do more than offer coöperation, wherever it might be needed. But we may be assured that the idea of an arch speedily suggested itself to the committee, and when the chairman of the land parade, General Daniel Butterfield, suggested an arch and its location, no time was lost in submitting a scheme which was not only an idea but a working plan, capable of being immediately carried out, and practically complete in itself. And the scheme, once undertaken, was pushed to completion without change or debate. No time was lost in argument, no time was wasted in studying suggestions for betterment. At the very beginning it was determined what was best to be done, and the work was carried out from that point-of-view. This adherence to a single idea was itself so valuable that we may entirely neglect the question, Was the scheme the best possible one to adopt? Once more the artists have demonstrated a new thing: not only have they taught the value of coöperation, but they have proved that they are capable of carrying out a great plan in a business-like manner, and without that strange pottering by the wayside that is so popularly believed to be part of the artist's character.

Another notable fact was the coöperation of architect and sculptor in a joint work from the very outset. This lesson alone is worth all the cost. The ordinary method of employing sculpture with architecture is, as is very well known, to design the structure and provide a few places, more or less, for the display of sculpture. The National Sculpture Society has, time and again, insisted that this is not the way to secure the best results. Its costly and elaborate exhibitions, in which for the first time sculpture was properly displayed as an independent art, and exhibited for itself, were important object-lessons in this direction. The Dewey Arch is an even more complete demonstration of this cardinal principle. It is true that in certain quarters one is told that it is a sculptors' arch, and therefore by inference not so good as an architects' arch would have been. This question need not be discussed. The arch speaks for itself. The most important fact is that sculptors and architect were joined, from the very beginning, in the production of a single scheme. It was not a scheme for an architectural display, nor was it a scheme for a display of sculpture. It was a monumental construction designed for the display of sculpture, and it is not too much to say that the greatest element in its success was the coöperation of the architect and the sculptors at every stage of the work, from the beginning to the end. It is to be hoped that this important object-lesson will not be lost to view when other great enterprises are proposed necessitating the union of the arts.

For many years architects have been stoutly demanding compensation for every possible service. Their efforts to raise the incompetent to a higher standard than they deserve, and to lower the men of genius below their natural level, by insisting on a uniform rate of pay for all, are too well known to be referred to. No doubt, many men have been benefited by the five-per-cent rule; but it is a strange proceeding for men calling themselves artists to insist that art shall be charged by a uniform schedule, at which the products of the good and indifferent, the incompetent and the man of genius can be had at a uniform rate of pay. But now the sculptors have come forward and performed a prodigious amount of work without asking for compensation or receiving the slightest pecuniary remuneration. No doubt, now the lesson has been taught, the architects would do the same were they to see a possibility of distinguishing themselves in a similar way. The sculptors never counted cost, never considered time, coöperation or possibility of failure. They saw an opportunity to ennoble their art by suppressing the question of compensation, and they did not hesitate to make sacrifices for Art's sake that they would not have done under other considerations. And the lesson is an easy one: it is sometimes better to work for Art than for five per cent. Barr Ferree.

CHEAP ELECTRIC-LIGHT FROM GAS.

INCANDESCENT electric-light is generally considered more desirable than gas-light, but the latter is much used because of its lower cost. At the usual figures charged for gas and electric energy, from the public supply, the cost of electric-light is frequently from one and one-half to twice that of the same candle-power from gas. As a common example, take the cost of electric-energy at 15 cents per kilowatt-hour and that of gas at $1 per 1,000 cubic feet. Allowing 5 cubic feet of gas for each 16 candle-power gas-burner per hour, which is a common consumption, the hourly cost per burner is ½ cent. Sixteen-candle incandescent-lamps may be had that consume but 50 watts, though many in use on the public electric-supply use energy at the rate of 60 watts. On the 50-watt basis, the cost of energy for a 16 candle-lamp per hour is (15 ÷ 1,000) × 50 = .75 cent, or one and one-half times the cost of the same lighting-power from a gas-burner. While it is thus true that gas consumed at the burner gives cheaper light than is to be had from the public electric-supply, it is equally true that far less light is to be obtained from a given quantity of gas when used at burners than it is capable of giving under other circumstances. A very small per cent of the energy from gas-combustion is given off as light at the gas-flame, but a very much greater portion of this energy can be obtained as mechanical power in the gas-engine cylinder. It thus happens that a far larger amount of light is to be had from a given quantity of gas when used in a gas-engine to drive a dynamo than when the light results directly from the gas-combustion. A fair quality of coal-gas when burned in a gas-engine of moderate capacity develops one brake horse-power with about twenty cubic feet of gas per hour, and some large gas-engines will show a horse-power hour on as low as 15 cubic feet. Dynamos with a capacity of 30 or more horse-power should show an efficiency of not less than 90 per cent on from three-fourths to full load, and smaller dynamos, above ten horse-power, should not fall below 85 per cent efficiency under the same conditions. To allow for the lower efficiencies on small fractions of its full load, the dynamo may be assumed to deliver only 80 per cent of the mechanical work transmitted to it as electrical energy. Since the gas-engine delivers one mechanical horse-power to the dynamo-shaft for each 20 cubic feet of gas burned per hour at full load, the delivery of one electrical horse-power hour, or 746 watt-hours, at the dynamo-terminals under average conditions will require 20 ÷ .80 = 25 cubic feet of gas to be consumed in the gas-engine cylinder. The electrical horse-power hour thus produced will operate very nearly fifteen (that is, 746 ÷ 50) 16 candle-power, 50-watt incandescent-lamps during one hour. As 5 cubic feet of this gas must be consumed at each 16 candle-power gas-jet per hour, the number and amount of electric-lights produced through the medium of the gas-engine and dynamo, by a given volume of gas, is three times as great (or 15 ÷ 5) as the gas-light this gas will furnish at burners. This great reduction in the amount of gas necessary to produce a given candle-power of light, by the use of the gas-engine and dynamo, obviously makes such an equipment very desirable in places where much gas is now used for illumination direct, unless the first cost and the subsequent care of a gas-engine and dynamo are such as to offset the higher efficiency of the gas with this machinery.

As to the care of a gas-engine and dynamo-plant, it should be noted at the start that no licensed or highly skilled steam-engineer is necessary, as there is no boiler involved. A small plant of this kind may be entrusted to the care of one with very little mechanical skill; but when the capacity is several hundred lamps, or more, it will usually pay to employ a machinist with experience in quick-moving machinery. The gas-engine and dynamo equipment does not require continuous attention, as is the case with steam, but may be safely left in operation during moderate periods while the person in charge is about the building on other work. As nearly all buildings that require enough light to make a gas-engine and dynamo advisable usually employ a man on heating and general mechanical matters, the addition of an electric-plant of the kind named will often add no labor-expense. As the labor item must in any case be small, and depend much on particular circumstances, no figures are given for it here, but the proper allowance may be made to suit individual circumstances.

The remaining charges against the engine and dynamo-plant are those for interest, repairs and depreciation, which may be calculated as follows: The approximate cost of gas-engines with the necessary fittings ready for service may be taken at $60 per horse-power capacity. Allowing but 80 per cent of the power delivered to the dynamo at full load to be supplied to the lamps, the cost of engine per electrical horse-power, or for each 746 watts delivered to the lamps, is found from 60 ÷ .80 = 75, or $75. A dynamo of moderate size, with suitable switch-board and fittings, in position to operate, may be had for $25 per horse-power capacity of output. In case electric-wires are installed at the start, instead of gas-pipes, the additional outlay for this part of the equipment will be small beyond that required by gas. Assuming that the wires must be erected in addition to the gas-pipes, the complete cost of wires, fittings and incandescent-lamps may be fairly taken at $50 per horse-power of electrical energy distributed. This figure for wires and fittings is large enough to cover the cost of first-class work in most buildings, and may often be reduced. The sum of all costs for gas-engine, dynamo, wires, fittings and lamps, as above found, is $150 for each electrical horse-power distributed to the lamps. As one electrical horse-power, or 746 watts, supplies practically fifteen 50-watt incandescent-lamps, the total investment per lamp is $10. Placing the interest at 6 per cent, and the combined depreciation and repair charge at 10 per cent, of the first cost, the total of these charges per year is $1.60 per lamp.

The average number of hours that each lamp or gas-jet must burn per year is subject to much variation in different buildings, but may be fairly taken at four hours per day during 300 days in the year, or 1,200 hours. Incandescent-lamps may be operated as much as 400 hours without serious diminution of candle-power, and at this rate three lamps per year will be required in the place of each burner. The market-price for 16 candle-power incandescent-lamps is 20 cents each, so that the three lamps will cost 60 cents. The total charges per 16-candle-power incandescent-lamp for interest, depreciation, repairs and lamp-renewals is thus 160 + 60 = 220 cents for a year

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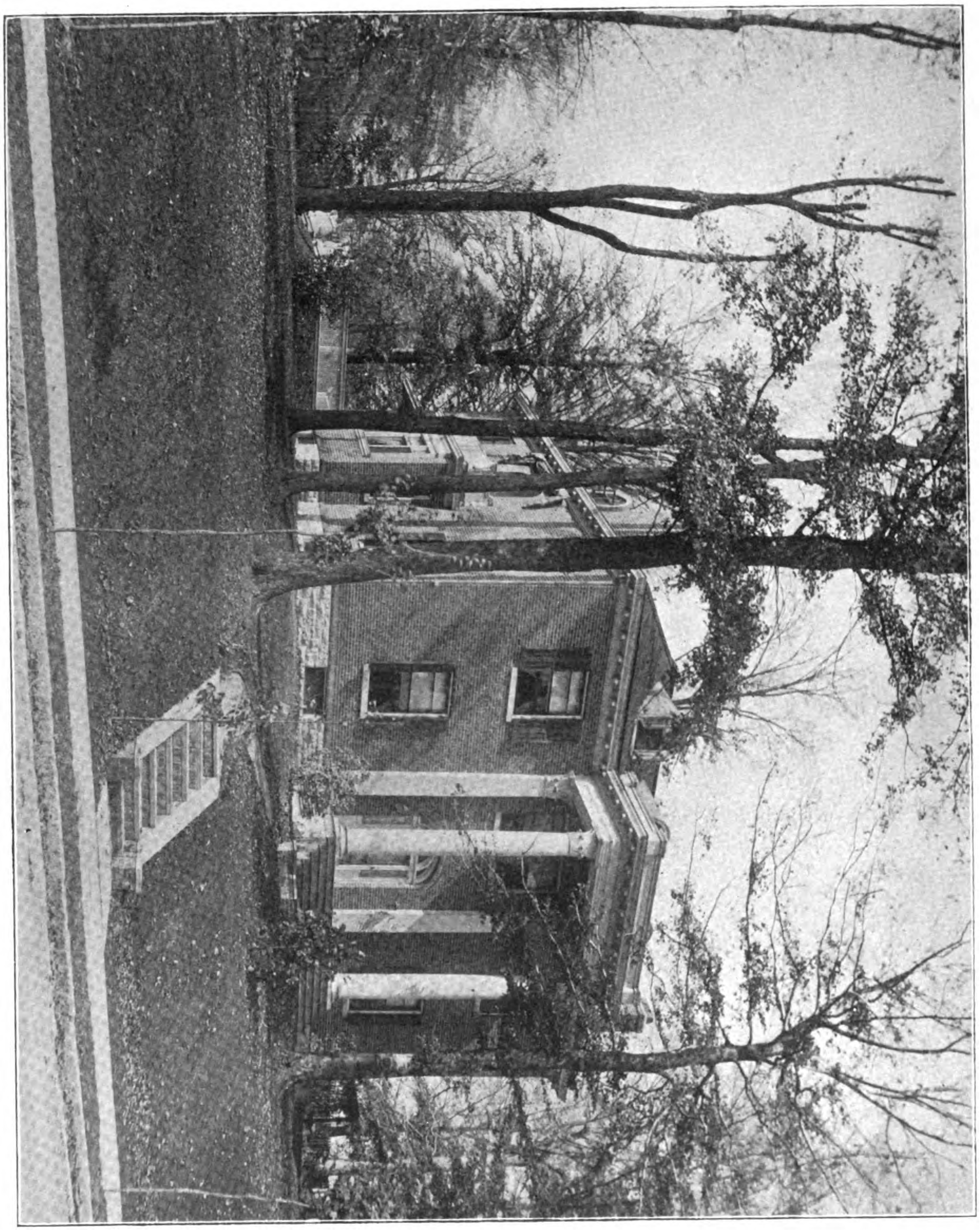

HOUSE OF ROBERT RAMSEY, ESQ, CINCINNATI, O.
ELZNER & ANDERSON, ARCHITECTS.

American Architect and Building News, Jan. 20, 1900. No. 1256

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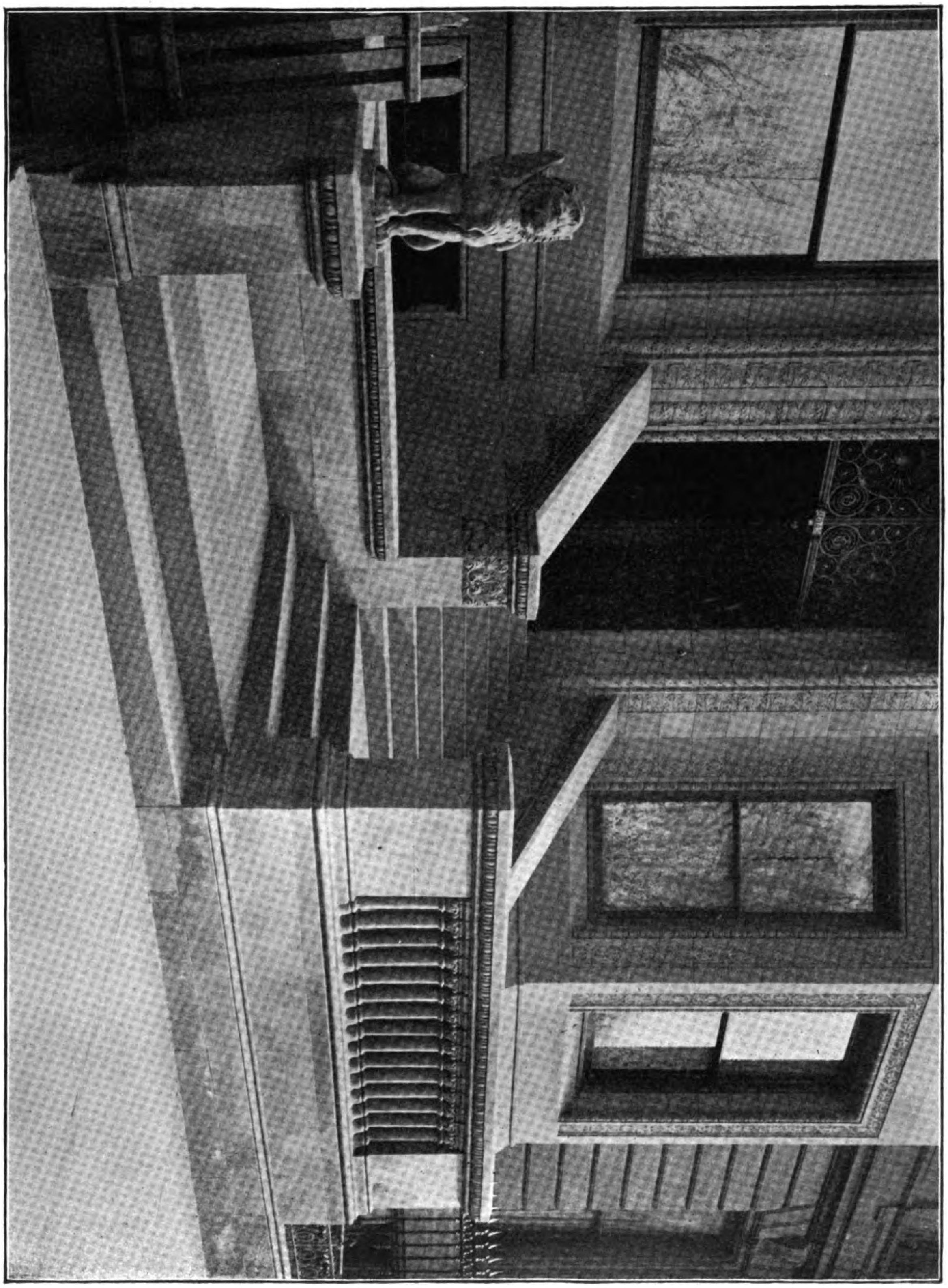

The New York "Box-stoop," No. VII.
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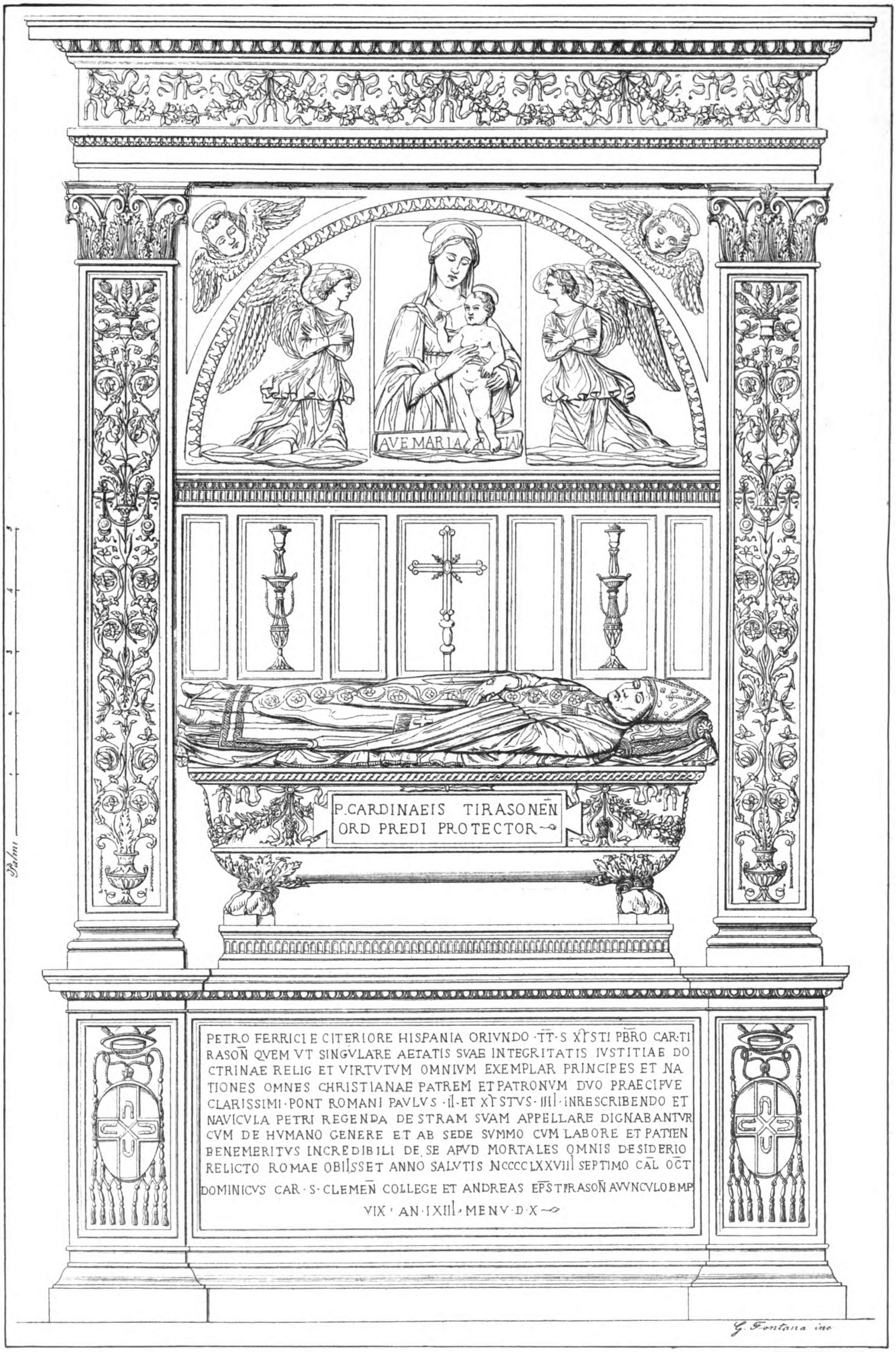
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TOMB OF CARDINAL TIRASO, IN THE CLOISTER OF THE DOMINICAN CONVENT OF MINERVA, ROME.

AMERICAN ARCHITECT AND BUILDING NEWS, JAN. 20. 1900. No. 1256

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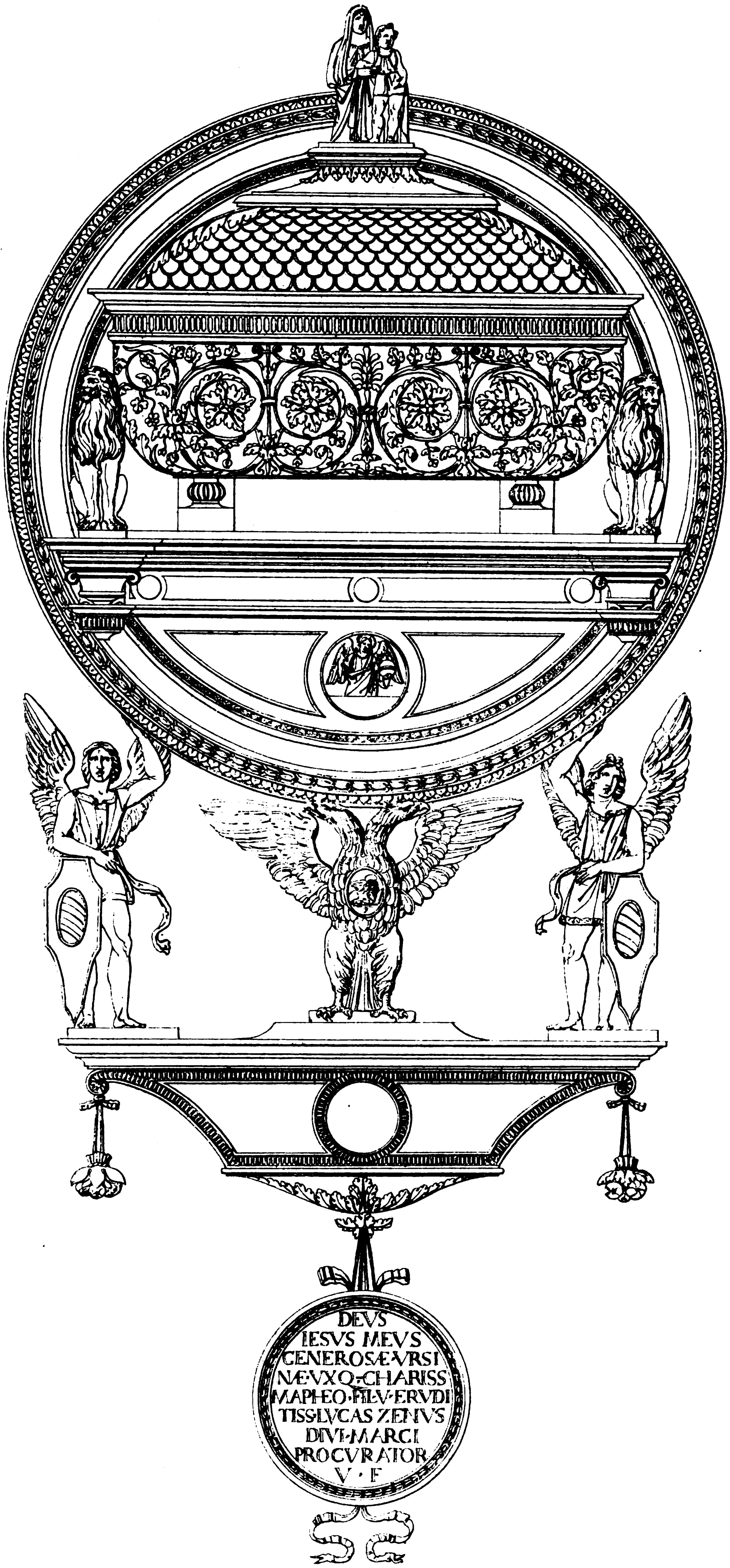
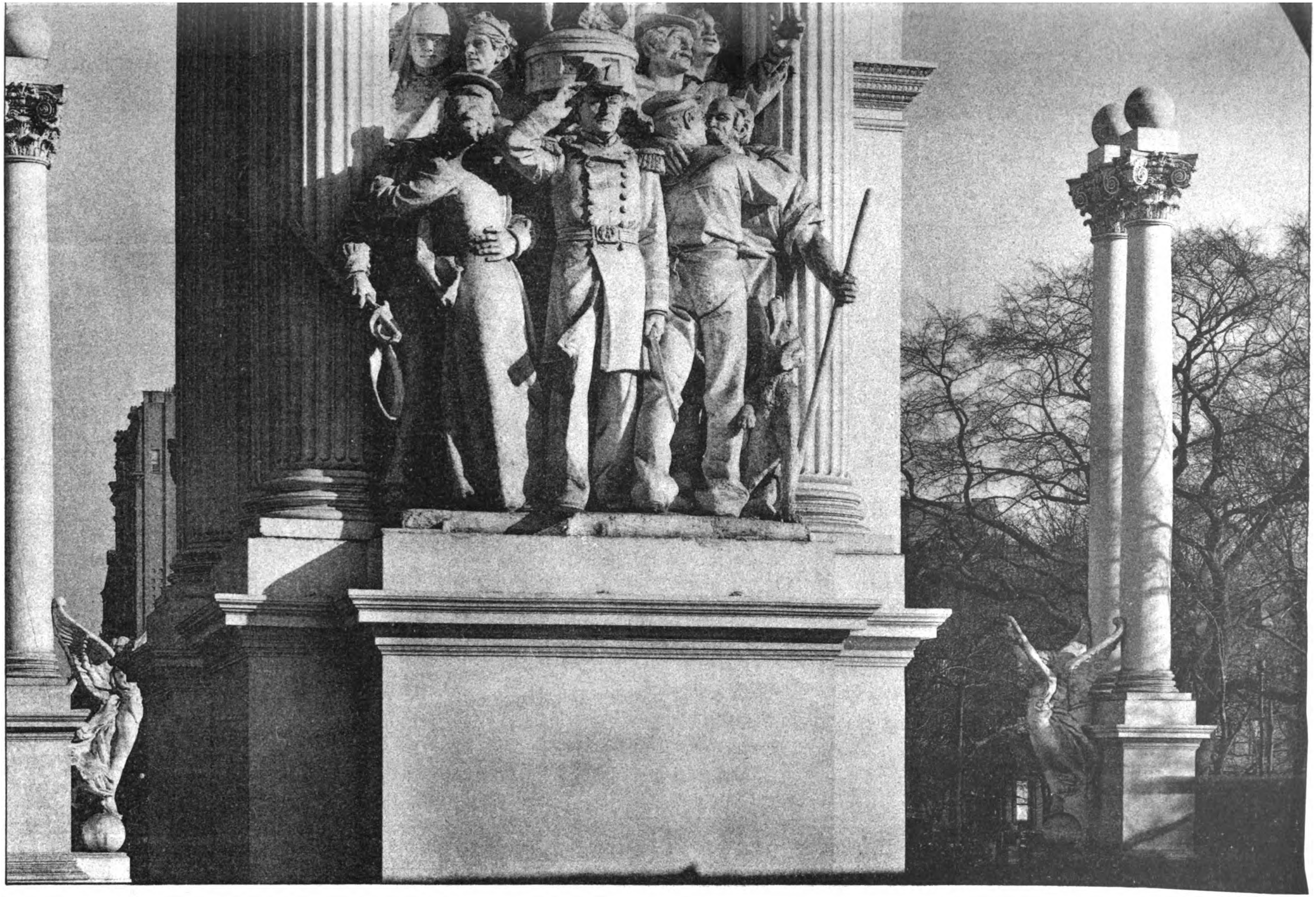


THE ZEN TOMB, IN THE CHURCH OF STA. MARIA GLORIOSA DEI FRARI, VENICE.

HELIOTYPE PRINTING CO., BOSTON.



HELIOTYPE PRINTING CO., BOSTON

THE SOUTHEAST PIER OF THE DEWEY ARCH, NEW YORK, N. Y.

"THE TRIUMPHAL RETURN."

C. H. NIEHAUS, SCULPTOR.

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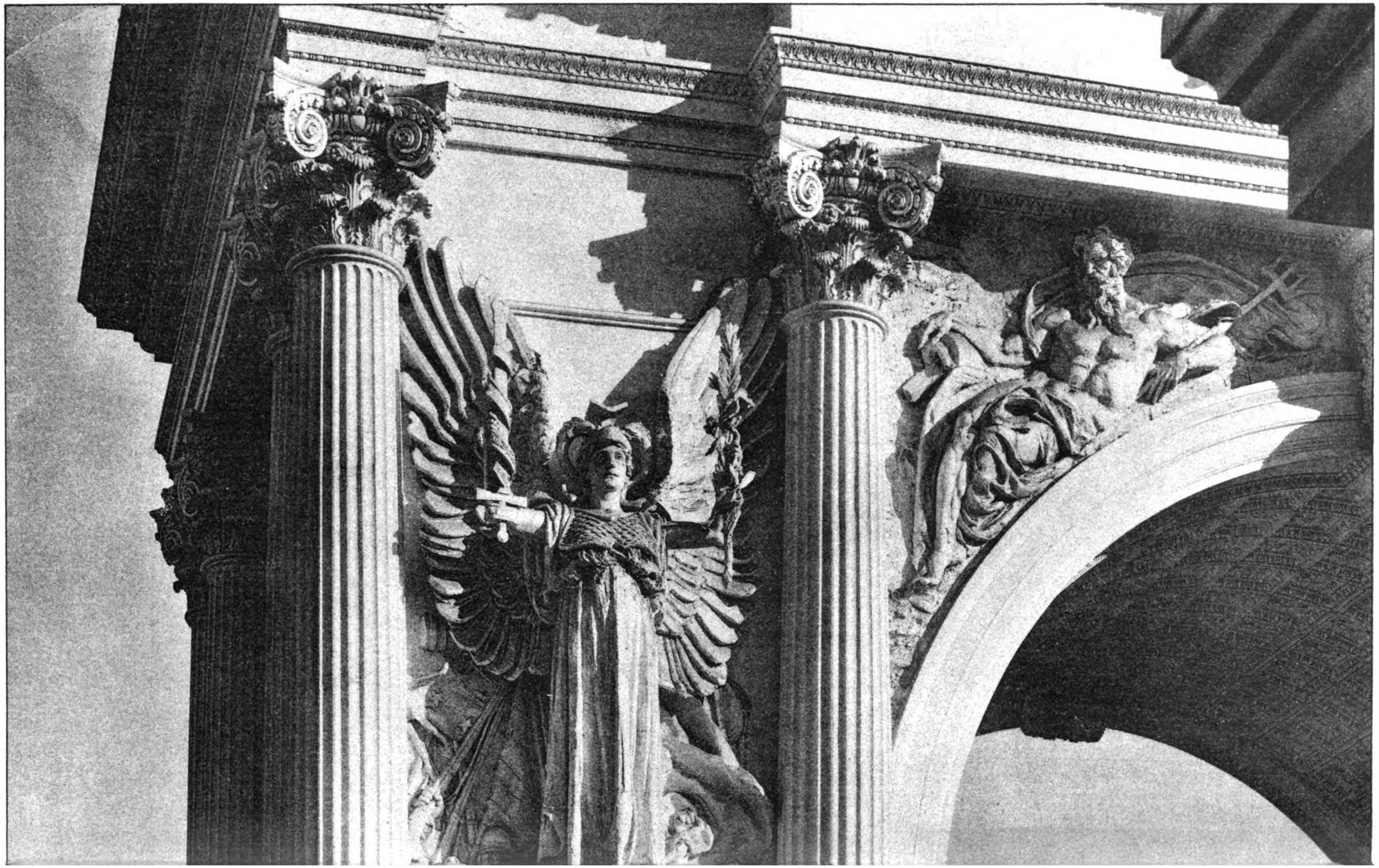

of 1,200 hours' use, so that the cost of these items per lamp-hour is, $220 \div 1{,}200 = .183$ cent. It was shown above that 15 incandescent-lamps are supplied with electric energy by the dynamo, with a consumption of 25 cubic feet of gas per hour in the engine, so that the gas used per lamp-hour is $25 \div 15 = 1.66$ cubic feet. At $1 per 1,000 feet, or one mill per cubic foot, the cost of gas consumed by the engine for each 16-candle-lamp maintained per hour is .166 cent. The total cost per hour of each incandescent-lamp for all charges, aside from the labor of supervision, is, therefore, $.183 + .166 = .35$ cent. The same quality of gas consumed directly at the burners on the basis of 5 cubic feet per hour for a 16-candle gas-flame gives a cost per light for gas alone of .5 cent.

Disregarding the item of labor, the gas-engine and dynamo equipment offers, therefore, a reduction of 30 per cent in the cost of lighting by gas and at the same time supplies a quality of light that is decidedly superior. While the labor-item in the care of the engine and dynamo is a variable quantity, it can hardly amount to more than a small part of the above saving in the ordinary case. It should be noted that the method of lighting by gas consumed at the burner was allowed several advantages in the above comparison in that no interest or depreciation was figured on the gas-pipes and by a liberal allowance for each item of the electrical equipment.

When a gas-engine and dynamo-plant is considered, the quality of the gas that is available should be learned, as its capacity to develop power in a gas-engine depends directly on the number of heat-units developed per cubic foot at combustion. The above figures are based on coal-gas, which has about 600 heat-units per cubic foot. Carburetted water-gas also has about 600 heat-units to the cubic foot, but water-gas from bituminous coal and from coke has but 300 to 400 heat-units per cubic foot, and what is known as producer-gas develops only about 150 heat-units per cubic foot when burned. The coal-gas and the carburetted water-gas are generally supplied for illuminating purposes. Natural gas has a heating value of 1,000 heat-units per cubic foot, or more than any of the manufactured gases.

ALTON D. ADAMS.

THE DANGERS OF ELECTRIC WIRING.

A RECENT issue of the London *Times* contains the following interesting letters from two men well known for their knowledge of electrical matters:

"*Sir:* Mr. Crackanthorpe has drawn attention to the undoubted dangers of bad electric wiring in houses. And though he mentions one remedy — the use of a particular incombustible mineral material as an insulator for the conducting wires — I would point out that there are others quite as satisfactory. In the first place, I would advocate the total abolition everywhere, except in laboratories and factories, of the use of wood-casing for covering the wires. I know that in this view I am at variance with many of the authorities and with half the electric-lighting contractors. I would not allow a single inch of wood-casing in my own house. When I wired it about six years ago I decided, in the teeth of all existing fire-insurance rules, to exclude wood-casing, and to employ instead either wires drawn into incombustible pipes or wires the insulation of which was protected by an armoring of lead. Lead-armored twin-conductors, braided together externally with an outer braiding, tarred or painted, constitute the main part of the wiring of my house. Such protected conductors are air-tight, water-tight, electric-tight, gas-tight, and rat-tight. They can be either imbedded in the plaster of the walls, or secured against its surface, or run under the floors, with the utmost security.

"In cases where internal conduits are employed, these likewise may be imbedded in plaster, or run under the floors with safety. Another point of divergence from the fire-rules that were in favor six years ago is the absolute avoidance of fuses in ceiling-roses and other inaccessible places. On the other hand, I rigidly exclude from permissible things, though permitted by the Insurance Inspectors, the existence of any joint, soldered or otherwise, however well made, in an inaccessible place under the floor. All branch-wires must be continued back to some accessible place, where they can be brought to a joint-box or fuse-box. Far too great a reliance has been placed by insurance-officers upon the use of fuses, with the result that there are far too many of them, and they are put in all sorts of bad places; for example, in ceiling-roses, and at every place where flexibles are joined to the leads. Far too little stress has been placed on the necessity of not allowing any joint where it cannot be inspected. But the greatest defect of all is this foolish allowance of the use of wood-casing. Behind it bad workmanship and bad joining lie hidden. As wood-casing is difficult to carry between floors it is often omitted in such parts, and the wiring goes unprotected in these uninspected regions. Also when wood-casing passes along a damp wall it may, except in those cases where alternating currents are supplied, set up new troubles arising from electrolytic conduction.

"In my Presidential address to the Institution of Electrical Engineers, I have so recently touched on another aspect of the use of internal piping for protection of electric wiring — namely, the question of cost — that I forbear to enter on that point. The main endeavor should now be to get rid of wood-casing at all costs. Mr. Crackanthorpe's letter shows how, even when carried out expensively, it is unsafe. What greater evil it may entrain in cases where the wiring is done by a jobbing-contractor at 8*s.* 6*d.* a point may be imagined. Prohibit wood-casing, and every wiring-contractor will be compelled to adopt methods which allow less scope for bad workmanship. With the total prohibition of wood-casing the chance of fire will assuredly diminish." I am, Sir, your obedient servant,

SILVANUS P. THOMPSON.

Technical College, Finsbury, E. C., December 19.

"*Sir:* I have read the letter of Prof. Silvanus Thompson which you printed yesterday with mingled feelings of satisfaction and regret — satisfaction that so high an authority concurs with me in distrusting the ordinary wood-casing as a protection to the insulating-envelope of electric-wires, regret that I had not had the advantage of his opinion before I used such casing in two residences — one in London, and the other in the north of England.

"My unpleasant experience of December 7 was not unique, for the next day I received from a distinguished artist a communication as follows:

"'The very same accident occurred to me in a London hotel. I had gone to bed, being very tired, soon after nine, and between twelve and one awoke with the room full of grayish vapor, which was not smoke and, though disagreeable, not suffocative, nor do I remember that it had any particular smell. I jumped out of my bed, however, and in running toward the bell to get assistance, my foot went clear through the floor, and flames, with all the ordinary scents of burnt wood, burst out. While waiting for help also, I did exactly what you did — poured everything I could get hold of in the shape of water through the burning hole. I had never the slightest doubt of the nature of the accident, and knew well enough that it came from an incandescent-wire.'

"In my previous letter I mentioned three precautions against insidious electric fires, viz: (1) Outside wiring; (2) abolition of wood-casing; (3) testing periodically for leakage, both by the earth test and by the pole-to-pole test. I propose now to enlarge a little on No. 2, since the proposal is of the highest importance and will be regarded as revolutionary by the trade. Prof. S. Thompson's words are 'the main endeavor should be to get rid of wood-casing at all costs,' and he suggests that we should employ instead 'either wires drawn into incombustible pipes, or wires the insulation of which is protected by an armoring of lead.' The latter, he tells us, is the way in which his own house was wired about six years ago, and he holds his apparatus to be 'air-tight, water-tight, electric-tight, gas-tight, and rat-tight.' I should be sorry to ruffle a feather of my friend the professor, for whose scientific attainments I have the most sincere admiration, but I confess that I am not entirely satisfied with his lead-armoring for general use. As was pointed out in a paper read last year by Mr. Frederick Bathurst before the Incorporated Association of Municipal and County Engineers, 'lead-coverings are liable to rapid deterioration when in contact with the strong chemical cements and plaster now commonly used in building-construction,' and just as rats and mice occasionally attack lead-covered gas and water pipes, so also will they attack lead-covered wires, regardless of the consequences to themselves that may ensue. The Conduit and Insulating Company, Limited, claims to have solved the insulation-protecting problem by running the wires through an iron tube, carrying on its inner surface an insulating lining so expanded by pneumatic pressure as closely to fit the tube. I pass no opinion on this contrivance, except to say that it seems to be both fire-proof and water-proof, also (so far as the lining goes) non-conducting. The material is, however, heavy, and, I should imagine, expensive.

"Another much cheaper method is to employ wood-casing, but not until it has been treated by a special process so as to be incapable of transmitting fire to other wood. In May, 1897, there was published in *The Times* a report of a testing of this process which took place on the site of old Millbank Prison, in the presence of the Prince of Wales, the United States Ambassador, and divers other personages. The result was entirely satisfactory, and wood so treated is now largely used in the ships of the United States Navy and also by our own Admiralty. The objection to it for electric conduits is that it carbonizes at the point of contact with flame, and therefore soon loses its protective quality when exposed to an arc-light caused by some rupture or defect in a wire.

"In my previous letter I also referred to asbestos, and there is no doubt that asbestos, such as that obtained from the neighborhood of Montreal, will, when mixed with good cementing materials, bear an enormous amount of heat without its durability being impaired. The Asbestos Company, Limited, claims to supply asbestos-fibre adapted for packing into electric wood-casing at a cost of not more than 3*d.* per foot, but the trouble is that asbestos is not moisture-proof, and that leaking of electricity through moisture is a dangerous source of fire.

"There is yet another method which I also referred to — viz., the use of uralite. On December 19 the manager of the British Uralite Company, Limited, wrote to you, Sir, to say that this material was about to be further tested and that he believed it would prove a success. I do not know how this may be, and shall await the result of the further testing with considerable interest.

"I have now, Sir, enumerated all the substitutes for ordinary wood-casing which have come to my knowledge. The question is, Who is to decide between them? In the United States the fire-insurance authorities have established an electrical-bureau, whose business it is to examine and test electrical-apparatus, to record particulars of electric fires, and to discover their probable origin. Can such a bureau be established here? I suggest that it can, and that the nucleus of it already exists in the electrical-department of the London County Council. That body sends us its admirable fire-brigade, and, after the fire is well over, if it is reported to have occurred through electricity, it sends us a highly-trained official to endeavor to ascertain the specific cause. These causes are, I presume, duly tabulated and classified. Prevention is, however, better than cure, and there are many of us who would be glad to have had the benefit of this departmental experience before we wired our houses. It is, perhaps, too much to expect that the insurance companies will unite and revise their rules made some eighteen years ago, and, failing such revision, we must look elsewhere. The London County Council might, as it seems to me, take the matter in hand, might examine the competing substitutes for wood-casing with the aid of impartial experts, and might recommend to the ratepayers of the metropolis such methods of electric-lighting as can be adopted at the least cost compatible with perfect safety." Yours faithfully,

Montague Crackanthorpe.

December 23, 1899.

THE NERNST ELECTRIC-LIGHT.

ELECTRICAL illumination has come to play so large and important a part in the economy of daily life that any invention which may have the effect of cheapening the cost of electric lighting by increasing the efficiency of the lamp, or of improving the color or quality of the light itself, must command a certain degree of popular interest. These attributes would seem to belong to the recent invention of Prof. Walther Nernst, of the University of Göttingen, a young man who is known by his published works as a leading authority on applied chemistry, and an original thinker and worker in the field of physical science.

It is generally known that the efficiency of an incandescent body is measured by the temperature to which it can be safely raised. In the ordinary bulb-lamp, the incandescent body which emits the light is a long, slender filament of carbon attached at its two ends by platinum connections, and set in a hermetically-sealed glass bulb from which the atmosphere has been exhausted. As this filament is necessarily slender and delicate, the temperature which it will stand — and consequently its luminous efficiency — is definitely limited, and as this limit was practically reached a number of years ago, there has been comparatively little improvement in incandescent lamps during the past ten or fifteen years. While nearly every other feature of an electric-lighting plant, generators, rectifiers, conductors, volt and ampère meters, etc., have been constantly and steadily advanced towards perfection, the lamp has remained limited as regards efficiency, which varies from 3 to 5 watts per candle, as well as in respect to amount and variation of pressure, and is moreover not wholly satisfactory as to cost of maintenance.

The problem undertaken by Professor Nernst was to find an incandescent filament or body which would stand a much higher temperature than carbon — one that would be less sensitive to variations of pressure, and, if possible, work without being sustained in a vacuum. For this purpose he chose the oxides of thorium, zirconium, cerium, and the other so-called rare earths which are used in making the mantles for incandescent gas-lights of the Auer von Welsbach type. Just what combination of these earths he has found most effective is not revealed, but his lamp consists of a rod of this material, 3 or 4 inches in length, held by metallic attachments at either end and inclosed for safety in an open glass globe.

This combination of oxides is in the highest degree refractory — that is, capable of withstanding very high temperature — but it is at the same time a non-conductor of electricity when cold, and only becomes an electrolyte when heated to a certain temperature. Its obvious advantage is, therefore, that it will bear pressures which would quickly destroy an ordinary carbon filament; and, as the luminosity of the lamp is measured by the temperature which it can withstand, it follows that the Nernst lamp should produce a given quantity of light cheaper than by the ordinary lamp with carbon filament. It is claimed for it that its consumption, including the resistance, is but 1.5 watts per candle for large lamps, and 1.6 watts for small lights or low pressures. Another — perhaps the chief — advantage of the new lamp is, that whereas the light of an ordinary carbon incandescent-lamp is too yellow, an arc-light too blue, and a Welsbach gas-light of a greenish hue, the Nernst lamp gives a light having almost precisely the same spectrum as sunlight, and it is asserted that this is the only artificial light by which delicate colors can be matched with practicable certainty.

On the other hand, Professor Nernst's invention would seem to be subject, at its present stage of development, to two grave defects, both of which may be more or less successfully overcome, but which now seriously restrict its commercial value. The first of these is the fact that it does not light instantaneously by simply turning on the current; the rod of refractory oxides must first be heated. For this purpose two devices are used — a small spirit-lamp which must be lighted with a match and turned out when the electrolyte has become hot and begun to glow, and, secondly, a heater, in the form of a coil surrounding, but not touching, the incandescent glower. This heater is supplied by the current from the moment when it is turned on, and is so arranged that when the rod has been heated and has begun to glow, the heater is automatically cut out of the circuit and relapses into disuse until needed again to light the lamp. All this apparatus, although beautiful as a mechanical device, is so expensive as to seriously limit the value of the lamp for practical purposes. Thirdly, the life of the incandescent glower, if operated at so high a temperature as to reach the best efficiency — say, two-thirds of a candle per watt — does not exceed three hundred hours, while the carbon filament is good for from six hundred to one thousand hours.

Until the first two of these defects can be reasonably overcome by further improvements, the use of the Nernst lamp will probably be confined mainly to large, powerful lights in stores, restaurants, churches, railway-stations, and public buildings, where the few seconds of time which is required to artificially heat the oxide rod to conductivity and the initial cost of the lamp itself are of small importance compared with the saving of 2 watts per candle and the advantages of an electric-light as genial and normal as sunlight. For photography, it will probably supersede all other forms of artificial light and make the photographer practically independent of weather.

Any general adoption of the Nernst light would require that in the end systems of distribution, which are now made for the carbon-lamp, should be laid out to suit it, and this would lead to important economies in cables, which now form so large a part of the cost of distribution systems. The new lamp can not only compete with the carbon filament at all ordinary pressures to which the latter is adapted, but in the higher pressures it will have the field practically to itself. Though not at present a perfected invention, it is entitled to the interest which belongs to a discovery that involves a radical departure from existing methods and points out a new direction in which future progress is likely to be made.

Frank H. Mason, *U. S. Consul-General.*

Berlin, October 27, 1899.

BOOKS AND PAPERS

WHEN a great painter also happens to be a genial, kindly gentleman; when a large part of that painter's work takes the line of portraiture; and when the writer of the "*Life and Letters*"[1] happens to be his son, what can be expected as the result of these conditions but a most interesting and attractive volume. Sir John Millais met everybody worth meeting, from the professional beauties to the famous statesmen; and it is from a letter of Mr. Gladstone's to Mr. J. G. Millais that we gather some insight into the painter's manner of working, or rather of the "intensity with which he worked," to quote the great statesman's words. Mr. Gladstone had always been surprised that artists can paint and talk at the same time — many cannot; hence their inability to be successful portraitists, for, as Mr. Gladstone says, "this must cause a division of energy unfavorable to the work," for portraiture, he adds, "is very arduous work. . . . The result of your father's practice was that, of all the painters I have ever sat to, he took the fewest sittings. This, as well as his success, was due, I think, to the extraordinary concentration with which he labored." Five hours is Mr. Gladstone's estimate of the length of the sittings which Millias required for the magnificent portrait, now, through the generosity of Sir Charles Tennant, one of the gems of the National Gallery, London.

Some of the anecdotes have of course been told before; but the following is new: "The Carpenter's Shop" was the outcome of the combined brains of the Millais family. Every little portion of the whole canvas was discussed, considered, and settled upon by the father, mother and Johnnie before a touch was placed on the canvas. While he was at work, his father and mother sat beside him most of the time, the mother constantly reading to him on every imaginable subject that interested the boy, or stopping to discuss matters with him. The boy himself joined freely and cleverly in the conversation, and when asked how he could possibly paint and talk at the same time, and throw such energy into both, he said, tapping his forehead: "Oh, that's all right, I have painted every touch, as it were, in my head long ago, and have now only to transfer it to canvas!" . . . The father, when unable to help in any other way, would occupy himself in pointing all Johnnie's pencils, or playing whole operas on the flute. This is a domestic interior that would have made an excellent subject for Millais's own brush. The picture, too, of the little boy-student of the Royal Academy being placed upon a stool to receive "all the medals and prizes" from a Royal Duke would be another good subject. The Duke asked the child (a name attached to Millais all his life by his intimate friends) if he could do anything for him. "Well, sir," said the young art-student, knowing that his questioner was Ranger of the Royal Parks, "if there is one thing I should like to ask, it is that I may have permission to fish in the Serpentine." Here is a witness to the truth of the proverb that the child is father to the man; for the great painter is said to have been prouder of landing a big salmon than of any of his professional successes; and upon this subject the book contains a witty letter from Sir William Harcourt, purporting to prove that the artist was under a "delusion" that he had killed a stag, which was but a wooden dummy set up to humor him after his "many failures," which were telling on his health and intellect.

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[1] "*The Life and Letters of Sir J. Millais, President of the Royal Academy.*" By his Son. 319 illustrations, including 9 photogravures. Two volumes. London: Methuen & Co. 32*s*.

The story of Carlyle asking Millais if "paint did all this," when he was leaving the palatial abode, is corrected by the biographer. It was Carlyle's niece who asked the question; and the answer, although characteristic of the sage, is thought to be apocryphal. "Ah, well, it shows what a number of fools there are in the world!"

In the early Pre-Raphaelite days, Millais suffered much pain from the short-sighted, narrow-minded, and, frequently, ignorant, critics, for any new departure in art invariably brings trouble upon the innovator; and, however confident an artist may feel of his own powers, he must, being of a sensitive temperament, feel hurt at adverse criticism when he knows it to be unjust and born of prejudiced *camaraderie.* Millais had a firm friend in Mr. Ruskin, to whom was mainly due the "discovery" of the two greatest British painters of the century, Turner and Millais. But even Mr. Ruskin poured forth his wrath over "Sir Isambras" and one or two other pictures of that period. But at the beginning of Millais's career, the ever short-sighted British public, led on by the critics, only coupled the writer with the painter, and dubbed them both a couple of fools, if not mad fools. Millais considered that there was a widespread conspiracy against him. "I cannot tell you of the incivility of certain of the members and their cantankerousness and jealous criticisms and ungenerosity. The *Times* is more wickedly against me than ever. It is well understood . . . that there is more than mere ignorance in the man [the critic]. I don't think there have ever been such endeavors to swamp a man as in my case." Doubtless Millais's honest and candid character added to his troubles in his young days; when he had made his name, outspokenness did not matter; but that a man should make such a remark, when discussing an Old Master, as this — "I can fancy that, some day, people will talk of that picture" (one of his own) "as we are now talking of Frank Hals," was to an ordinary man, if not an impertinence, at all events a piece of aggressive vanity and conceit. And yet, was he not right? Are not many of his portraits equal in power to those by Hals; and should we not couple the modern British painter with Rubens, Rembrandt and Velasquez? This is bold criticism, but most people, certainly all artists whose opinion is of any value, will endorse it; and, taking the work of those three great men, are we giving too much praise to our own painter if we say that his portraits of "Mr. Gladstone," "Cardinal Newman," and "The Yeoman of the Guard," are quite equal to, and may be compared favorably with, any of those by the above-named Old Masters.

It is impossible, in the space at our service in this journal, to give an ample review of this most interesting "Life"; it swarms with letters from, and to, the painter, besides appreciations, recollections, and anecdotes of the latter. The following is not a bad specimen: In the picture of "Nell Gwynne," now in the Tate Gallery, the horse alone was finished by Landseer at the time when he died, and the owner, one of the Rothschilds, asked Millais to complete it. Every one knows the peculiarity of the animal-painter's handling of the brush. One morning a celebrated art-critic called and was much impressed by the work. "Ah! to be sure," he said, going up close and examining a deerhound which almost breathed in the foreground, "how easily one can recognize Landseer's dogs! Wonderful, is n't it?" "Yes, it is wonderful," remarked Millais, lighting another pipe, "I finished painting that dog yesterday morning, and have done the whole of it myself." Many of Millais's models were friends. In the early pictures, Rosetti, Hunt, Stephens and Hughes figured; in one of the later, the "Northwest Passage," Trelawney, the friend of Byron and Shelley, sat for the old sea-captain.

The painter was an excellent correspondent — his letters are witty and entertaining; as a critic too, he was supreme. He not only saw the faults, but he put them straight with a few touches, though some sensitive students dreaded his "piece of chalk." On the testimony of Mr. Val Princep, R. A., he used the chalk most freely. "That 's too small. Your ear is in the wrong place; it ought to be there (chalk). It 's extraordinary how seldom fellows get the position of the ear correctly. Bring that out — so (chalk)" — and so on. On the other hand, he said it mattered little how you get the effect, "so long as you get it." Millais loved music; it cheered and inspired him, and of course he had the pick of the profession to entertain him, besides home music by members of his own family. As an art-critic he was most just to both young and old, as time will prove. "When I look round and see the work of some clever young men, I find no sense of beauty. Even their paint is not beautiful! Now, look here (pointing to Leighton), you may, or may not, agree with his method of painting, but it is *all beautiful.*" Here again — of Whistler. "Clever a fellow as he is, I regard him as a great power for mischief amongst young men — a man who has never learnt the grammar of his art, whose drawing is as faulty as it can be. He thinks nothing of drawing a woman all out of proportion, with impossible legs and arms proceeding from no one knows where. Any affectation of superiority in style has its effect on certain minds and attracts a certain number of followers, but when a spectator has to ask himself 'Is this right?' he may be pretty sure it is wrong."

As to Millais's precocious talent, the reader should turn to some of the portraits done at the age of nine, and a wonderful sketch of Hatfield House, in order to realize what a pull a man with such correct observation must have over those who only arrive at the same amount of skilfulness after years of study. It is also interesting to trace the different influences of Hogarth, Etty, Dürer, Michael Angelo and Retsch, before he developed his own Pre-Raphaelite manner in "Isabella," "Ferdinand lured by Ariel," "The Carpenter's Shop," "Grandfather and Child," and finally, the exquisite "Huguenot." Here we must pause, but not without strongly recommending the reader to turn to the work itself, if for no other purpose than to see the most astounding example in modern times of artistic development. Now and again, he goes backwards (what artist does not?); but the *faux pas* only gave impetus to a still more astonishing bound into the ranks of the great army of Immortals.

SOCIETIES

AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS.

THE annual dinner of the American Society of Landscape Architects was held recently at the Hotel Martin. Members of the Society were present from Boston, Chicago and other cities. Among the members attending were: John C. Olmsted and Frederick L. Olmsted, Jr., and Warren H. Manning, from Boston, and O. C. Simonds from Chicago. Among the members from this city were Miss Beatrix Jones, C. N. Lowrie, Downing Vaux, Samuel Parsons, Jr., D. W. Langton, George F. Pentecost and Miss Bullard.

The officers elected for the ensuing year were as follows: *President*, John C. Olmsted, Boston; *Vice-President*, Samuel Parsons, Jr., New York; *Secretary*, Downing Vaux, New York; *Treasurer*, C. N. Lowrie, New York. William H. Manning, of Boston, was elected a member-at-large, to constitute, with the four officers, the executive committee. There were no papers read or addresses delivered, as the dinner and annual business to be transacted consumed too much time.

ILLUSTRATIONS

[*Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.*]

THE SOUTHWEST PIER OF THE DEWEY ARCH, NEW YORK, N. Y.: "THE TRIUMPHAL RETURN." MR. C. H. NIEHAUS, SCULPTOR.

SEE article elsewhere in this issue.

HOUSE OF ROBERT RAMSEY, ESQ., CINCINNATI, O. MESSRS. ELZNER & ANDERSON, ARCHITECTS, CINCINNATI, O.

THE NEW YORK "BOX-STOOP,"—VII: NO. 874 FIFTH AVE., NEW YORK, N. Y.

TOMB OF CARDINAL TIRASO, IN THE CLOISTER OF THE DOMINICAN CONVENT OF MINERVA, ROME, ITALY.

THIS plate is copied from Giacomo Fontana's "*Raccolta delle migliori Chiese di Roma e Suburbane.*"

THE ZEN FAMILY TOMB, IN STA. MARIA GLORIOSA DEI FRARI, VENICE, ITALY.

THIS plate is copied from Cicognara's "*Le Fabbriche e i Monumenti conspicui di Venezia.*"

[The following named illustration may be found by reference to our advertising pages.]

CHAMBER OF COMMERCE, NO. 3 RUE FEYDEAU, PARIS, FRANCE. M. J. LISCH, ARCHITECT.

THIS plate is copied from *L'Architecture.*

[Additional Illustrations in the International Edition.]

THE NORTHWEST PIER OF THE DEWEY ARCH, NEW YORK, N. Y.: "PEACE." MR. DANIEL C. FRENCH, SCULPTOR.

[Gelatine Print.]

THE SOUTHEAST PIER OF THE DEWEY ARCH, NEW YORK, N. Y.: "THE COMBAT." MR. KARL BITTER, SCULPTOR.

[Gelatine Print.]

HOUSES AT WOOD GREEN, GUILDFORD, PENNS AND WALSALL, ENG. MESSRS. HICKTON & FARMER, ARCHITECTS.

NOTES AND CLIPPINGS

ODD ARTESIAN-WELLS. — "A very unique system of artesian-wells is being put in by one of the breweries at St. Louis," said H. E. Geith, of St. Louis. "The wells may not be exactly artesian-wells, but the water obtained from them is clear and sweet, and the average man knows no better. These wells, instead of being bored perpendicularly, are driven at an angle which varies from one of forty-five degrees to others more acute. This may sound to you like a fairy tale, but it 's a fact, curious though it may be. Underlying the territory around St. Louis is a thick layer of hard limestone which has proved no end of trouble to well-borers. No good artesian-water is possible without passing through this bed of limestone, and to do this is an awful job and a costly one. In order to get around this obstacle an ingenious well-man up there has devised the filter-well, like the one I first spoke of — a well which to all intent and purpose is artesian, but really gets its water from the Mississippi River. At St. Louis the sand-beds in the bottom of the Mississippi are quite deep, and this natural feature has been utilized in a very unique manner. From a barge in the middle of the river, in a direct line from the point where the well is to be sunk, a civil-engineer takes soundings and determines accurately the depth of the sand-stratum beneath the river. He then measures the distance from the plant where the well is to be to the middle of the river. From his measurements he calculates the angle necessary to strike the sand-stratum at its lowest point, starting from the point where the well is desired, as well as the amount of tubing required for the well, and with these figures starts the well-digger on his curious task. A core-drill is started into the ground at the proper angle and forced forward by a battery of hydraulic-jacks. As the drill goes deeper and deeper the core is forced out, more tubing is coupled on and the increasing length of pipe is shoved out toward, and finally under, the river. When the sands are reached, the water which percolates under pressure through them is forced through the tubing, to which a brass-strainer is attached to keep out the grit and allow the free passage of the water. After the well is finished a suction-pump, or 'air-lift,' is installed, and as long as the strainer is kept in order fair water is obtained. In wells of this type the air-lift is most desirable. By this system the water is forced out of the well by means of a column of compressed-air which is driven to the bottom of the well. Sometimes the well-tubing becomes bent and diverges from a true angle. If the curve is very great the chances are the strainer will not rest in the sand at all and the water will not be pure. But as a general thing these 'horizontal' wells are a success." — *Memphis Scimitar.*

OPHIR. — Dr. Carl Peters, who arrived in London the other day from Africa, has given some further details concerning his discovery of what he believes to be the ruins of the ancient Ophir. He said that he had been exploring the country between the Zambesi and the Pungwe in Portuguese East Africa and Eastern Mashonaland. Before he started from England he had information which led him to believe that Fura was near the eastern entrance of the Lupata Gorge. There he had found it. It was situated on the banks of the Muira River, about fifteen miles south of the Zambesi and half-way between Sena and Tete. At the time of his discovery he had with him Mr. Puzey and two mining-engineers — Mr. Gramann and Mr. Napolski. Fura was the native corruption of the word Afur, by which name the Arabs of the sixteenth century knew the district. Afur was the Sabæan, or South Arabian, form of the Hebrew name Ophir. He had ample proof that the Fura which they discovered and explored last summer was the Ophir of the Old Testament. The natives called themselves Makalanga, which means People of the Sun. They were to this day sun and fire worshippers. They were quite unlike the ordinary African, and had a distinct Jewish type of face On arriving in the district he soon found that the natives had some idea of the existence of the ancient Ophir. In fact, they washed gold themselves after the rainy season, and after storing it in quills did a fairly large trade in it with Beira and Tete. A chief gave him valuable information regarding the position of ancient workings, which he at once investigated. Going to the spot indicated, he found ruins of undoubtedly Semitic type. Fura itself he found to possess a formation of quartzitic slate and diorite between which gold reefs were running. The workings which he found were not only surface workings, but shafts and roads hewn into the rock. — *N. Y. Evening Post.*

AN EARLY SUSPENSION-BRIDGE. — The first bridge built across the Merrimac River, at Newburyport, Mass., was built by Timothy Palmer in 1792. The structure consisted of two bridges resting upon Deer Island. An arch of 160 feet span and 40 feet above high water connected the island with the mainland on one side, and several spans did a like service upon the other. In passing, it may be said that an old legend relates that the island derived its name from the fact that a deer jumped upon it from the mainland across the channel. Passengers upon the old steamer "*Merrimac*" can even now see a pair of antlers fastened to a tree-trunk standing upon the island a little above the bridge, said to be the antlers of the deer which made the remarkable leap. The present chain bridge replaced the 160-foot arch in 1810, and was built by John Templeman of the District of Columbia. According to the tablet upon one of the towers this was "the first chain suspension bridge built in New England." The distance between the centres of the towers is about two hundred and forty-four feet, and the length of the roadway carried by the cables about two hundred and thirty feet. The towers above the roadway are built of heavy timbers protected with a shingled covering. The bridge consists of two independent roadways, side by side, each about twelve feet in the clear; each roadway is carried by two sets of cables, each set being composed of three chains made of links 24 inches long. The floor-system is of wood. The anchorage is about one hundred feet from the towers and the cables run to the tops of the towers without any vertical load. The cables hang in vertical planes, and there is no lateral bracing of any kind other than the floor-planking. Electric-cars have crossed this bridge some eight years, a line of rails being laid in each roadway. To one who has not experienced seeing the rails rise up in front of the car as it moves forward and downward, the sensation is anything but pleasant at first. A light summer-car in the centre of the span causes a vertical deflection of at least two feet. A car crossing the bridge, as viewed from a boat upon the river a little above the structure, gives a beautiful illustration of wave-motion. In the modifications which are contemplated to prevent so much wave-motion in the floor, it is to be hoped the general appearance of the structure may be preserved. — *The Railroad Gazette.*

PROTEST AGAINST SEWAGE-FARMS IN THE SUBURBS OF PARIS — I have already given your readers an account of the new sewage-farms situated to the northwest of Paris in the vicinity of Pierrelaye and Méry-sur-Oise intended to complete the amount of surface necessary for the complete earth-filtration of the sewage of the capital. So will be realized the dream of "everything to the sewer," an idea formulated some fifteen years ago and already realized at Gennevilliers and Achères. The sewage-farms at Pierrelaye and Méry-sur-Oise, however, do not appear to give unmixed satisfaction. All the local wells are infected, and it is evident from the occurrence of an epidemic of intestinal troubles that the earth-surface is not enough to secure thorough filtration. The sewage seems to escape through fissures in the soil into the subterranean sources of supply to the wells. The authorities of the neighboring parishes were obliged during the hot weather to draw water from the Oise and carry it round in tanks for gratuitous distribution among the population. On learning that the City of Paris intended still further to increase the quantity of sewage distributed on the land, the inhabitants got up a protest, and already 5,000 names have been attached to it. The City of Paris, unable to deny the damage of which it is the author, and recognizing the necessity for doing something without delay, has placed Pasteur-filters in all the schools and public establishments. This, however, is only a provisional remedy, and the inhabitants maintain that Paris, which has contaminated their wells, should supply them with pure drinking-water at its own cost. — *The Lancet.*

HOW TO VIOLATE AN INSURANCE-POLICY. — Property-owners often violate the terms of a fire-insurance policy, says the New York *Evening Post*, without knowing it. Hundred of dollars are thus paid out yearly for policies that would be worthless if a claim should be contested. An authority calls attention to the following ways in which a policy of fire-insurance can be violated: —

(1.) Failure to pay premium at the proper time.

(2.) Change of title or ownership by sale, gift, marriage settlement, devise — any way but by descent — without the consent of the company.

(3.) Mortgaging the property insured, real or personal, when prohibited by the conditions of the policy, without the consent of the company.

(4.) Foreclosure proceedings without the consent of the company.

(5.) False statements in applications (when applications are taken) relating to title, encumbrance, and other facts material to the risk.

(6.) Other insurance without the consent of the company.

(7.) Permitting buildings insured to become vacant or unoccupied for more than ten days without the consent of the company.

(8.) By taking in a new partner without the consent of the company.

(9.) Increase of risk by keeping prohibited articles on the premises or by change of occupancy of the premises insured.

(10.) By the removal of personal property to a new location without the consent of the company.

(11.) The erection of an exposure to the property insured without the consent of the company.

ÆSTHETIC EASEMENTS. — The law of "æsthetic easements" has been worked out recently by the Massachusetts Supreme Court. The Legislature in 1898 passed a law prohibiting the erection of buildings more than ninety feet high on streets adjoining Copley Square, and providing compensation for such property-owners as should be damaged by the limitation. The constitutionality and effectiveness of the statute were questioned by property-owners. The Court held that the statute, like the right of eminent domain, effected a taking of rights in property for the benefit of the public who use Copley Square. It added to the park "rights in light and air, and in view over adjacent land above the line to which buildings may be erected." These rights were declared by the Court to be in the nature of casements over the lands adjoining the park, and similar to rights in highways, ponds, and navigable waters of the Commonwealth. The Court based its decision in part on the argument that the same reasons which justify the taking of land for a park justify the expenditure of money to make the park "attractive and educational to those whose tastes are being formed and whose love of beauty is being cultivated." This case (Attorney-General *vs.* Williams, 55 Northeastern Reporter, 77) may be a precedent for similar efforts elsewhere, as. for instance, in the matter of preserving the Palisades. — *N. Y. Evening Post.*

AN ARCHÆOLOGICAL SURVEY OF THE SOUDAN. — An interesting outcome of the opening of the Soudan by General Kitchener will be an archæological survey of the region. The Egyptian Government has already appointed as Inspector of Antiquities Howard Carter, who for many years has been identified with the Egyptian Exploration Fund. The appointment of an Englishman will be specially welcomed by Egyptologists and all who may be interested in the antiquities of the land of the Pharaohs, as hitherto posts of this character have invariably been given to Frenchmen. Mr. Carter is at present engaged at Thebes in completing his work at the temple for the Egypt Exploration Fund; but it is understood that this will be his last season there, and early in the new year he will enter upon his new duties. — *N. Y. Tribune.*

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THE death of John Ruskin will affect many people, who disagreed with most of what he said, with a sense of personal loss. Harsh and unjust as was often his criticism of other people, and demoralizing as was his fashion of speaking of them, there was in him at times a passionate elevation of spirit, an intensity of love of moral and physical beauty, and a hatred of meanness and dirt, which appealed to the inmost heart of his readers. For this he has been beloved, in spite of his innumerable follies and inconsistencies, by millions of readers, and millions more, we may hope, will find in his works encouragement for their purest aspirations. We need hardly repeat what every one knows, that John Ruskin was the son of a prosperous London wine-merchant. About his mother little seems to be known, but his father, as he tells us himself, was a man of intelligence and taste, for whom he always retained a great affection and respect. The younger Ruskin was educated at Christ Church College, Oxford, and after his graduation devoted himself to the study of art. It is often said, particularly by the class of artists who, as we are informed, used to drink, in their café in Rome, to the confusion of "il Giuda Rooschino," that he never got beyond the amateur, that is, the rudimentary stage in the practice of art; but this is far from being the case. Although he devoted himself mainly to water-color, which was then at the height of its popularity in England, he was a master of this medium, and one of his drawings, "The Fall of Schaffhausen," belonging to Professor Norton, which has occasionally been exhibited, surpasses, as we recollect it, in fire and inspiration, anything in water-colors that we know. It is, however, hard for a painter to express himself in this intractable medium, and it was in his beautiful drawing that Mr. Ruskin was most successful as an artist. It was, moreover, easier for him to convey his thoughts by words than by form or color, and what might have been a great artist of the Florentine type became a great writer on natural and moral beauty, his disquisitions on these subjects being at first strung, so to speak, on a thread of artistic comment. The result was, not unnaturally, to convey to the minds of his readers a confusion between heavenly aspiration and French pointed arches, and between the Venetian Renaissance and corrupt luxury, which, in his own thoughts, was probably derived more from accidental coincidence than from reasoned conviction, but which had some singular results. For a time those people in England who aimed at a reputation for aspiring to the true and the beautiful betook themselves to French Gothic, Pre-Raphaelitism, Turnerism and other eccentricities, and Mr. Ruskin is said himself to have said later that he felt as Frankenstein might have felt when the monster that he had called up confronted him. Disappointed in the visible effect of his influence on art, he turned his attention to political economy, in which, as an intelligent University man, he would naturally take an interest. At this time writers on political economy were numerous, and Mr. Ruskin found no difficulty in holding some of them up to ridicule, while his own theories, though little less illogical and ridiculous in many cases, gained much credit, particularly among the poorer and less critical classes, through their evident care for the individual man, as distinguished from the atom in a struggling and selfish mass, which the economists of that day delighted to expatiate upon. To a man of Ruskin's sincerity the idea of publishing a theory without acting upon it was intolerable, and he divested himself of nearly all his property to found what he called St. George's Guild, under the auspices of which should be taught and practised the things which he considered of importance. This institution still flourishes, although in a modest way, as the Ruskin foundation is, practically, its only support, and very pretty stories are told of the good conduct of its members, several of whom now live in this country. After completing this important work, Mr. Ruskin, whose health, never good, had suffered from various circumstances, retired to a cottage in the country, where most of the remainder of his life was passed.

NO one was ever more conscientiously sincere about himself than Mr. Ruskin, and it is due, not only to himself but to others, to observe that his divorce from his wife, who afterwards married Millais, the artist, although it undoubtedly saddened his subsequent life, and perhaps brought about the occasional attacks of mental derangement from which he suffered in his latter years, was without fault on either side. In fact, as English law could find no legal ground for a separation asked for by the noblest self-renunciation on one side and hardly less noble frankness and confidence on the other, a special Act of Parliament was passed to annul the marriage and set the parties to it free. It is a curious and significant commentary on Mr. Ruskin's writings that, while such conduct in a public man, or, indeed, in any other person of prominence, would have excited amazement, it seemed, as did his subsequent endowment of St George's Guild, only what was to be expected from him, as if he alone out of all the people who preached great thoughts was believed to be sincere enough to put them into practice.

THE Fine-Arts Union of Washington asks all artistic associations to join with it in protesting against having any alterations or additions to the Executive Mansion of the United States, supposing that any such are necessary, devised or executed without the examination and advice of an expert commission of architects, landscape architects and sculptors of national reputation; and in recommending that the commission proposed should be appointed by the President of the American Institute of Architects, the President of the National Sculpture Society, and the President of the National Academy of Design. It is known that an attempt is to be made, under very powerful patronage, to have an amateur scheme for the enlargement of the building adopted by Congress at the present session; and no time should be lost by artistic associations in endorsing the protest of the Washington Fine-Arts Union, and in requesting Congress to legalize such a commission as is proposed. Blank forms, ready for signature by the president and secretary of societies of the kind, can be obtained from Mr. T. F. Laist, Secretary of the Fine-Arts Union, the Octagon, Washington, D. C.

ACCORDING to the newspapers, there has been a sort of tacit competition in the matter of the public buildings in Cleveland and Indianapolis between the Supervising Architect's office and the profession at large. While the Cleveland building is to be designed by outside architects, in competition, the drawings for the Indianapolis building, which is of nearly equal importance, have been made in the Supervising Achitect's office, and are said, as we can readily believe, to be extremely creditable. Senator Fairbanks, of Indiana, however, at the request of some of his constituents, has made representations to the Treasury Department, saying that the people of his State would prefer to take advantage of the law authorizing competitions in such cases; and the plans prepared by the Supervising Architect will probably be abandoned.

WITHOUT any reflection on the Supervising Architect, or his conduct of his office, it seems to us that this incident shows the necessity for something more definite than the Tarsney Act, by which the designing of public buildings is now regulated. This measure, in deference to a public sentiment which had not made itself very clear to the minds of politicians, permitted the Secretary of the Treasury to obtain designs for public buildings from architects outside the Treasury Department, in competition, but did not render this obligatory; so that, if he found that the public preferred official architecture, or that the employment of outside architects involved any unforeseen difficulties, he could follow the dictates of his own judgment. Meanwhile, as the Supervising Architect might, in consequence of this discretion, be called upon at any time to furnish designs for important buildings, it was necessary to retain in his office a considerable number of highly skilled men, ready to undertake at a moment's notice the work of the most accomplished outside architects. It was very possibly with the object of keeping these men employed on work worthy of their powers that the important Indianapolis building was taken out of the competitive list, and a large sum of money, undoubtedly, expended on making the drawings for it. If, then, as seems to be the case, the people of Indiana prefer to have an unofficial design for their building, the money spent on the official plans has been thrown away; and more public money is likely to be thrown away in the same manner until some definite policy is adopted in such matters. It seems now tolerably plain that the people of the United States, as a rule, like the system of employing outside architects to design, in competition, the Government buildings. The competitions interest a large number of persons, and there is a general feeling that in this way the cities in which such buildings are erected are more sure of securing something in which they will take pride, and which will serve to educate the community in artistic matters; while, as has been often shown, the cost of having public buildings designed in this way is less, rather than greater, than that of having them designed by officials. There is now no reason, therefore, why the system, instead of remaining tentative and permissive, should not be permanently established, enabling the Supervising Architect to save a large expense in making, or holding himself ready to make, the costly drawings which would, under a fixed system, all be made in the offices of private architects, and attracting, more than can be the case under the present vacillating and uncertain system, the best class of architects, who will rarely take part in ventures in the decision or conduct of which any room is left for chance or whim.

A COMPETITION case has just been decided in Pennsylvania, which, as architects will observe, seems to be rather ungrateful territory for incautious members of the profession. The County of Luzerne invited competitive designs for a court-house, promising that the authors of the five plans next in merit to the one accepted should be paid three hundred dollars each. The design of Mr. Osterling, of Pittsburgh, was placed first, but, as it appears, is not yet carried out, and so the building has not been accepted by the County, and he has not been paid, nor has anything been paid to the authors of the five plans next in merit, although the award has been duly made. Mr. Kipp, who was placed among the five, concluded to sue for his money, which had been refused him by the County Controller, who claimed that Osterling had not been paid; that his building had not been accepted, and that nothing was due to the five others. The Court, however, thought differently, and ordered the money to be paid to Kipp. It is fair to say that the County Commissioners seem to have acted honorably in the matter, and granted an order for payment of the five awards, but the Controller refused to cash it, alleging, as an excuse, an interpretation of his own of the contract which had been entered into.

A REVISION of the laws regulating the height of buildings in the city of Paris has been under consideration for several years and certain changes seem likely to be made. The present rules restrict to twenty metres the vertical height of walls bordering on a street of twenty metres or more in width, but permit a roof to be added, the profile of which shall be inscribed in an arc of a circle having its centre at the level of the top of the vertical wall, and a radius not greater than eight-and-one-half metres, the arc to be tangent to the vertical face of the front wall. The proposed modification, which has been adopted by the Commission of the Municipal Council, restricts the height of the vertical wall within the same limit, but permits the profile of the roof to be inscribed in an arc of ten-metres radius instead of eight and one-half. This gives as the maximum height of buildings for private purposes in Paris about ninety-eight feet from the sidewalk to the highest point of the roof, instead of the ninety-one feet allowed by the present law. In the case of public buildings, as with us, the law seems not to be applied, and the city of Paris is said to be now erecting a building which is to be fourteen stories high above ground, as a storehouse for records.

THE Pan-American Exposition, to be held at Buffalo from May to November, 1901, invites applications for space. The buildings are so far advanced that the reception of exhibits will begin November 1, next, unless some postponement, of which exhibitors will be advised, should be found necessary. A charge is to be made for space for individual exhibits, and charge will also be made for power and for light, and for the cost of wiring for electric-lights. The Governments of the United States and the State of New York have made large contributions to the exhibition, and it will doubtless be of much interest. The department devoted to what the Director-General is pleased to call the "New Possessions" of the United States will probably be viewed with mixed feelings by visitors. That it may be made, as we are told, "intensely interesting" is unquestionable. A model, for example, of the old man in a Philippine village who was shot dead by an American sentry while carrying a child, mangled by an American shell, to a place of safety, would be as interesting an object as is likely to be found in the whole Exposition. Whether the interest will be accompanied with satisfaction is another matter. Although the Exposition is intended "fittingly to illustrate the marvellous development of the Western Hemisphere during the Nineteenth Century," and "the Government of the United States has indicated to the Governments of the Nations and Colonies of the New World its desire and hope that they participate in this Exposition," there is no very definite indication in the circulars as yet sent out, to show how many of these Nations and Colonies have accepted the invitation. Perhaps the "intensely interesting" character of the exhibit from the New Possessions of the United States makes them a little nervous; but, even without that, the fact that South America is far more closely connected, commercially and socially, with Europe than with the United States is likely to reduce the importance of its representation. Intending exhibitors may obtain blank applications for space, and all necessary information, by addressing the "Director-General, Pan-American Exposition, Buffalo, N. Y."

THE United States Geological Survey shows in its annual report that the supply of natural gas, which for many years has furnished a cheap and excellent fuel in many portions of Pennsylvania and Ohio, is rapidly diminishing. In nearly every gas-well district the pressure has fallen off, and in Pennsylvania, which has longest been supplied with natural gas, the annual value of the output now is less than one-third what it was in 1888. In this region, also, it is said that furnaces which were constructed to use natural gas for fuel are being remodelled to burn coal, and the blessing to which its industries have owed so much will soon be a thing of the past.

THE Massachusetts Charitable Mechanic Association has long had in mind the establishment of a trade school, after the model of those which have done so much for workingmen in New York, and, a practicable scheme having been prepared, such a school is to be opened this year, probably in October, in suitable rooms in the Association's building on Huntington Avenue. For the first year, three classes will be maintained, limited, probably, to twenty students in each. Undoubtedly, further details will be made public as the arrangements are completed.

THE SO-CALLED BATHS OF TITUS.

INNOVATION and change in matters of archæology take place rapidly nowadays, and in a journal of this sort it is necessary to take account of them. At present it is the turn of the Baths of Titus, which are really the Baths of Trajan. This is not precisely a novelty of to-day, hardly of yesterday, and it is one of those questions which are interesting only to those who are particularly concerned with Roman archæology.

The ensemble of the so-called Baths of Titus occupy a vast surface almost accurately bounded by the present streets Labicana, della Polveriera, S. Pietro in Vincoli and delle Sette Sale. Over all of this surface, here and there, rise ruins of halls, exédras, corridors; and amongst these ruins the most remarkable are those of the hemicycle in which the French government, in 1809-14, placed a powder-mill which gave its name to the aforementioned street. I will not speak of the considerable ruins near the Sette Sale, or of the crypt under the Church of S. Martino, for, in fact, under the name of the Baths of Titus there is understood in general the accessible side which almost corresponded with the middle of the southern side of the whole building. This, nevertheless, still more than the Baths built above it, forms a portion of the earlier "*domus aurea*" of Nero; and on these baths exist ancient inscriptions, and a citation in the "*Liber Pontificalis*" (Vita Simm.) says that the majestic building was erected quite near the Church of S. Martino ai Monti. Near this church, in fact, was discovered, in the sixteenth century, a vase, a reminder of the ornamental work executed in the Baths at the expense of Julius Felix Campaniano, prefect of the city.

It is useless to recall to you that the arrangement of these baths has a great analogy with that of the Baths of Caracalla; and that the baths of which I am writing were particularly famous because of the numerous and precious statues which were found there, as well as because of the splendid painted decorations which in Italy became the fashion during the Renaissance. I speak of the "*grottesche.*"

The suggestion that possibly these ruins were not the Baths of Titus, but in reality those of Trajan, dates back some little time, but to-day, thanks to the studies of M. Lanciani, this doubt has been removed by the examination of a drawing of Palladio's and in consequence of excavations which have been undertaken between the Flavian Amphitheatre and the Esquiline. So that now we are able absolutely to assert that the ruins hitherto called the Baths of Titus are, in reality, the Baths of Trajan, which in the regional catalogues and inscriptions are named separately. The real Baths of Titus used to rise almost at the west side of the Baths of Trajan, which, according to the testimony of Suetonius, were built by that emperor immediately after the dedication of the neighboring amphitheatre. The remains of the Baths of Titus were discovered in 1895, during the excavations just mentioned, at a point north of the amphitheatre and the Rue Labicana, on the left side. So the true Baths of Titus rose on the summit of the Oppian by the side of the Rue Labicana, which was on a level with the amphitheatre, and access was had to it by means of a monumental staircase, at the foot of which was built a portico which formed the beginning of the Baths. This is the same portico some remains of which are still visible in the shape of a series of brick piers, decorated with half-columns and connected by ruined arches. The portico and the monumental staircase were in fair condition in the time of Palladio, who, hence, was enabled to make an illustration of them in his work on the baths of the Romans. The baths were connected with the private palace of Titus, in which, according to Pliny, was preserved the group of the Laocoön, which was discovered in 1506, "*in domo Titi*" as Pliny says. This affirmation might seem in contradiction with the theory which seeks to restore to Trajan that which belongs to him, and which from time immemorial has been attributed to Titus; but the contradiction is only apparent, for, according to the investigation of this question, the discovery of the group, which, according to the testimony of Pliny, was found "*in domo Titi,*" only signified that Trajan made use of the palace of Titus for the construction of his baths. And here it is just as well to recall a few dates. Titus reigned from the year 79 of the Christian era until the year 81; and Trajan, successor of Nerva, reigned from the year 98 down to the elevation to the imperial throne of Adrian, in 117. In short, the Baths of Titus and those of Trajan were both built upon the same ground, and rose above the ruins of the "*domus aurea*" of Nero, which, as has been a hundred times repeated, according to the original scheme of Nero, was to have had as great an extent as from the north slope of the Palatine across the Velia and the low valley between the Palatine and the Cælian as far as the Oppian: whence the palace itself was called "Transitoria." But this was destroyed by the terrible conflagration of the year 65; and the emperor built a second one, less expensive, but of astounding richness.

Nevertheless, even the Baths of Trajan did not lack that air of sumptuosity which was proper to Roman architecture. On the contrary, among the monuments of Rome there did not exist many which could compare with these baths, and, since I have occasion to draw the attention of the reader to a monument of which the influence upon the decorative art of Italy at the time of the Renaissance has been profound, I beg the reader to glance with me at the decoration of these Baths, formerly ascribed to Titus but now to Trajan. It is precisely through these Baths that the artistic knowledge of the entire world has been enriched by a word which generally is not translated but everywhere still preserves its Italian aspect. I mean the word "*grottesche.*" Just what these "*grottesche*" are there is no living man can describe: motives of painted ornamentation, drawn or sculptured, reproducing bizarre subjects or forming arabesques in interlacements in which appear extravagant figures and fantastic animals. But that which, perhaps, is less known is the origin of the Italian word in that which concerns its connection with the artistic subjects which come under the name of "*grottesche.*" This word has its etymology in "*grotte*" or "*grotta,*" that is to say, places dug out, caves, or caverns, and to explain the real meaning we must go back, not to the time of Titus or Trajan, but only to the time of the Renaissance in the sixteenth century. At this time the Baths of Trajan were accessible, and Raphael, with his pupils, just then on the point of decorating the celebrated loggie of the Vatican, went there to study these decorations, painted in the fantastic taste which smacks much of that Hellenistic art improperly called Pompeian. It is Vasari, the Plutarch of Italian artists, who tells us of these repeated visits to the Baths, which, because of their antiquity, had become subterranean structures like caves, or caverns, or, finally, *grotte*. Hence the name "*grottesche*" is given to the decorations which clothe the walls and the vaults of the so-called Baths of Titus, called also "Raphaelesque decoration," which has the same meaning. The story also goes that Raphael and his pupils, in order that no one might know of their plagiarism, caused these particular portions of the ruins to be filled up — a tale which is wholly unlikely, both because of its contrast with the known archæological spirit of Raphael and because history does not confirm it. As a matter of fact, the records exist that these ruins were accessible up to the beginning of the eighteenth century, and it was only at this time that they were made inaccessible because of having become the resort of brigands, who in them found a fairly secure retreat. History recounts that in 1776 Ludovic Mirri uncovered them and explored a portion of them; but it was only in 1813, during the French domination, that they were uncovered to almost the extent which they are at present. The writers on the Cinquecento, on the other hand, assert that the decorations of the so-called Baths of Titus excited the curiosity of everybody in Rome, and this, too, shows the unlikeliness of the story that the ruins were filled up in the time of Raphael.

We will not linger over these particulars where the truth resembles the light of fable which children find glimmering across their fancies. Let us rather stop a moment and consider the character and importance of these decorations, which are often cited but are very little known in reality.

The decorations of the so-called Baths of Titus have the same characteristics as the paintings at Pompeii, and belong to that simple style which, when I was once writing to you on the matter of ecclesiastical decoration, I indicated under the denomination of "first period of the second style:"[1] ediculæ on slender columns, little images, genii, little trophies, little figure-paintings. On certain walls these ediculæ are repeated to excess and the uniformity and symmetry of the resulting effect have a very monotonous character. As a rule, there is an absence of candelabra (it is necessary to keep in mind the Pompeian paintings) and no excess of ornamental details except on certain vaults that are greatly overloaded; not that they are bizarre although they are monotonous. For example, one vault very richly decorated on its different faces bears certain figures half clothed with robes which conceal even the heads. These figures are repeated, equal in action, in the movement of the draperies, and in every way. The remarkable peculiarity is that these friezes, which are very varied, are developed with great mobility about scenes and paintings which look like copies of bas-reliefs.

A description of these paintings, which are executed in fresco, like almost all Hellenistic paintings, would carry me very far. I can only tell you there is here a veritable mine of ornamental motives and one which has been very slightly explored in comparison with its total richness. Students and decorators are drawn to the study of Pompeian paintings, or to those discoveries in the Garden of the Villa Farnesina (now in the new Museo delle Terme, at Rome), and only in rare cases pay any attention to these decorations to which I now draw attention. The explanation of this preference, and of this forgetfulness, rests in great part on the fact that no one has as yet had the inclination to make known the decorative beauties of these so-called Baths of Titus. Many people know the existence of these decorations, but the greater part do not take the trouble to really make their acquaintance. And yet, there is one fairly rich publication, of the last century, to be sure, a fact which is not an endorsement of its stylistic fidelity. This publication, "*La Terme di Tito e loro interne pitture,*" dates from 1776, and was made by Ludovic Mirri, whom I mentioned a moment ago, with drawings by François Smugliewiez, a Polish painter, and engraved by Marc Carloni in an atlas containing several plates showing both the ensemble and details, with text by the Abbé Carletti. In fact, this text has been published apart from the plates under the title "*Le antiche camere delle Terme di Tito,*" that is, the Ancient Chambers of the Baths of Titus." I do not know the fate of this publication, which, while being without color, yet had a truly royal air. Certainly to-day it is altogether forgotten, and I am pleased to remind people of its existence in this review, feeling sure of rendering a service to architects and decorators. Above all, I desire to call attention to the beauty of the vaults, and this makes the value of the work I mention all the more considerable, for to-day wall-paintings are less sought after than those suitable for vaults.

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[1] *American Architect*, February 8, 1896.

The halls of the so-called Baths of Titus most highly decorated open on the portico which I mentioned, and then there is the crypto-porticus, on the middle of which is legible the following inscription in Latin: "*Duodecim et Jovem optimum maximum habeat iratos quisquis hic minxerit aut cacarit,*" and the triclinium.

I do not wish to take leave of my readers without furnishing the literary means of informing themselves in every way possible on the subject of this article and the novelties which I have referred to. Beside the ancient writers Pausanias (X. 12. 4) Cass. Dio. (LXIX. 4. C. I. L. VI, 1670, 8677, 8678, 9797), the reader can turn to the following modern works: Becker, "*Handbuch der römichen Alterthümer,*" Leipsic, 1843 (1.688); "*Beschreibung der Stadt Rom,*" von E. Platner, C. Bunsen, E. Gerhard, etc., Stuttgart, 1830-42 (III. 2. 221); Canina, "*Indicazione topografica di Roma antica,*" Rome, 1850 (IV. tav. 202–204); Jordan, "*Topographie der Stadt Rom im Alterthum,*" 1871–85 (II. 524); and especially Lanciani, "*Forma urbis Romæ,* Mediolani, 1893–96 (tav. 23. 29); also Gilbert, "*Geschichte und Topographie der Stadt Rom im Alterthum,*" Leipsic, 1883–90 (III. 297); the superb publication of the Deutsches archäologisches Institut, "*Mittheilungen, Rom,*" 1892 (tav. 302), and the "*Monumenti antichi pubblicati per cura della R. Accademia dei Lincei,*" Milan 1890–96 (484). ALFREDO MELANI.

GAS FOR LIGHT, HEAT AND POWER-TRANSMISSION.

THE importance of coal-gas as a factor in the production of light, heat and power is on the increase. During some years gas was regarded simply as an agent for illumination, and the price of artificial-gas in the United States still confines it largely to lighting purposes. The abundant and cheap supply of natural-gas as fuel for domestic and manufacturing purposes in some of the States has been a great object-lesson, and the reduced prices now charged in many large cities for artificial-gas is developing its wide use in cooking, and to a less extent in heating. The almost instant production of a high degree of heat at the gas flame, its ease of regulation and ready extinction are main causes of its popularity. An additional point in favor of gas for cooking is its small expense in operations that require heat at a particular point during short periods at a time.

The last decade has witnessed great improvements in the gas-engine, which now bids fair to become of the highest importance as a prime mover. As the gas-engine draws its supply directly from a service-pipe, or small reservoir, the first-cost of a plant for a given power is less than that of an equivalent boiler and steam engine, with the necessary accessories, and smaller floor-space is required. Another condition in favor of the gas-engine is the fact that, in small plants, a highly-skilled and licensed engineer is not necessary. On fairly-constant loads of nearly its full capacity, the gas-engine, in moderate sizes, consumes about twenty cubic feet of gas, of good quality, per horse-power-hour, at a cost of two cents, with gas at one dollar per thousand cubic feet. From five to ten pounds of coal per horse-power-hour are commonly consumed with small steam-engines and boilers, making the full expense from one and one-fourth to two and one-half cents per hour, with coal at five dollars per ton. When the extra labor necessary for the care of a steam-boiler is considered, the gas-engine is apt to be at an advantage, unless the exhaust-steam is wanted for heating purposes.

The ease and cheapness with which gas is distributed through city pipes, and the higher efficiency of the gas-engine over that of the combined steam-engine and boiler, have led to the proposal that gas distribution be used to replace that by electric systems to a large extent. This power-distribution by gas would apply to electric light, power and traction service, and include gas-engines and electric generators of moderate capacity at frequent intervals over the service-area.

Another subject of much importance that is now receiving attention is the long-distance transmission of gas from coal-mines to centres of population, and along the line of railroads to supply motive-power for trains. These last propositions again include electric-generating stations at suitable intervals, driven through gas-engines by the long-distance supply.

A glance at the methods of production and the qualities of gas will do much to indicate its fitness for these several purposes. Coal-gas is commonly made by the application of great heat to bituminous coal in retorts or closed chambers. Under this process one ton of coal yields about 10,000 cubic feet of coal-gas, 1,500 pounds of coke, 120 pounds of tar, and 140 pounds of ammonia liquor. The cost of gas-production is, of course, a variable quantity, depending on the transportation-charges for coal, and other factors; but there is little doubt that near the coal-mines the coke and other materials incident to gas-production have enough value to cover the entire expense of the process and pay a fair profit besides. Under these last conditions, therefore, the value of gas can only be placed at a very low figure. The greatest objection to gas for illuminating purposes rests on its vitiation of the air by the products of combustion, a fault from which the incandescent electric-lamp is entirely free. The gas-flame also suffers in comparison with the incandescent-lamp in the matter of heat given off per unit of light, and in its quality. It is interesting to note in this connection that 20 cubic feet of gas will develop one horse-power-hour when used in a gas-engine. The gas-engine driving a dynamo will supply about twelve sixteen-candle-power incandescent-lamps per horse-power-hour, while 20 cubic feet of gas consumed at the burners give only four or five sixteen-candle-power jets during one hour. In this last fact rests a large measure of justification for the growing extent to which electricity is displacing gas in illumination.

Coal-gas liberates about 700 heat-units per cubic foot when burned, so that the total heat furnished by the gas made from one ton of coal is about $700 \times 10,000 = 7,000,000$ units. A good gas-coal when totally burned yields about 14,000 heat-units per pound, or $14,000 \times 2,000 = 28,000,000$ units to the ton, so that about one-fourth of the heating-power of coal is imparted to its gas. The cubic feet of coal-gas equivalent in heating-effect to one pound of coal is represented by $14,000 \div 700 = 20$ feet. At five dollars per ton, one pound of coal costs .25 of a cent, and the price of coal-gas can only be $.25 \div 20 = .0125$ cent per cubic foot, or 12.5 cents per thousand cubic feet, if it is to be equally cheap with coal for fuel.

While it is no doubt impossible under present conditions to distribute coal-gas at any such figure as that just named, so low a price is not necessary to its extensive use for fuel purposes. In various English cities, including London, coal-gas is sold at from fifty to sixty cents per thousand feet, and is used to a large extent as fuel for cooking and mechanical operations. Charges as low as one dollar per thousand feet for coal-gas in some American cities have also done much to extend its use as fuel. The advantages of gas over coal in the ability to start, regulate, and stop a fire at will warrant the substitution of gas in many cases, even at the prices named.

Certain varieties of gas derived from coal, as water-gas and producer-gas, have heating values only one-third to one-half as great as the regular coal-gas, and any extended plans for heat from gas should therefore be based on a knowledge of the particular gas to be used. While one ton of coal yields 10,000 cubic feet of gas, which in the gas-engine is competent to supply $10,000 \div 20 = 500$ horse-power-hours, the same amount of coal consumed with the ordinary steam-engine and boiler, in moderate sizes, will hardly develop more than $2000 \div 5 = 400$ horse-power-hours. This difference in power-production is to be especially noted, because the coke, tar and ammonia yielded in the process of gas-making are about equal in value to the coal used, while in the generation of steam-power the coal is entirely consumed. The great importance of power transmission and distribution and the easy transfer of gas through pipes give especial interest to the economical performance of gas-engines.

The electrical distribution of energy for light and motive-power purposes is a highly important interest in most large towns and cities, Starting some years ago with a small steam-generating station for each moderate area of service, systems of electrical distribution are coming to include, in each, one large steam-plant that develops all of the electric energy for a wide area, and a number of sub-stations suitably located over it. Current sent out by the main generating-station at high electric pressure is received at the sub-stations and converted to a low pressure for consumers' use. The first-cost of the main station and of the electric-conductors running to the sub-stations is very large, and the combined losses of generation, transmission and conversion considerable. Another factor that counts against the combined steam-and-electric system is the fact that the engine can at best deliver only about fifteen per cent. of the heat energy from coal as mechanical motion. A large gas-plant connected by pipes with sub-stations containing gas-engines and electric-generators would supply sufficient gas to operate a given electric load with but little greater consumption of coal than would be necessary for a steam-plant, and have a remainder of coke, tar and ammonia nearly equal in value to the coal used. It is thus a serious question whether a gas-plant will not replace the great steam-driven station in electric systems.

The transmission of power from coal-fields to great cities has long offered an inviting opportunity to electric systems, but the expense of the necessary conductors and the losses incident to transmission and conversion have thus far proved prohibitive over distances of one hundred miles or more for the average case. The inability to make very long transmissions with economy is one of the main factors that prevent the substitution of electric-motors for steam-locomotives in regular railroad work. The transfer of gas through pipes offers an economical solution of both the last-named problems, as the supply of natural-gas over very long distances to cities has demonstrated that the power required to overcome the friction between gas and its pipes, when suitably designed, is but slight.

These few glances at the expanding field of gas utilization indicate that the electric arts, instead of displacing it, will find in gas the foundation of their greatest applications and triumphs.

ALTON D. ADAMS.

A SANMICHELE PALACE.—The ex-Empress Frederick of Germany has just purchased a fine villa on the Lake of Garda. The house is delightfully situated on Cape San Vigilio, and belonged to the family of Brennzoni. It is in the purest Renaissance style, by the famous Verona architect Michele Sanmichele, and was built in the first half of the sixteenth century. The terrace of the villa reaches far into the lake, and from it is obtained one of the most lovely views in Southern Europe.—*N. Y. Evening Post.*

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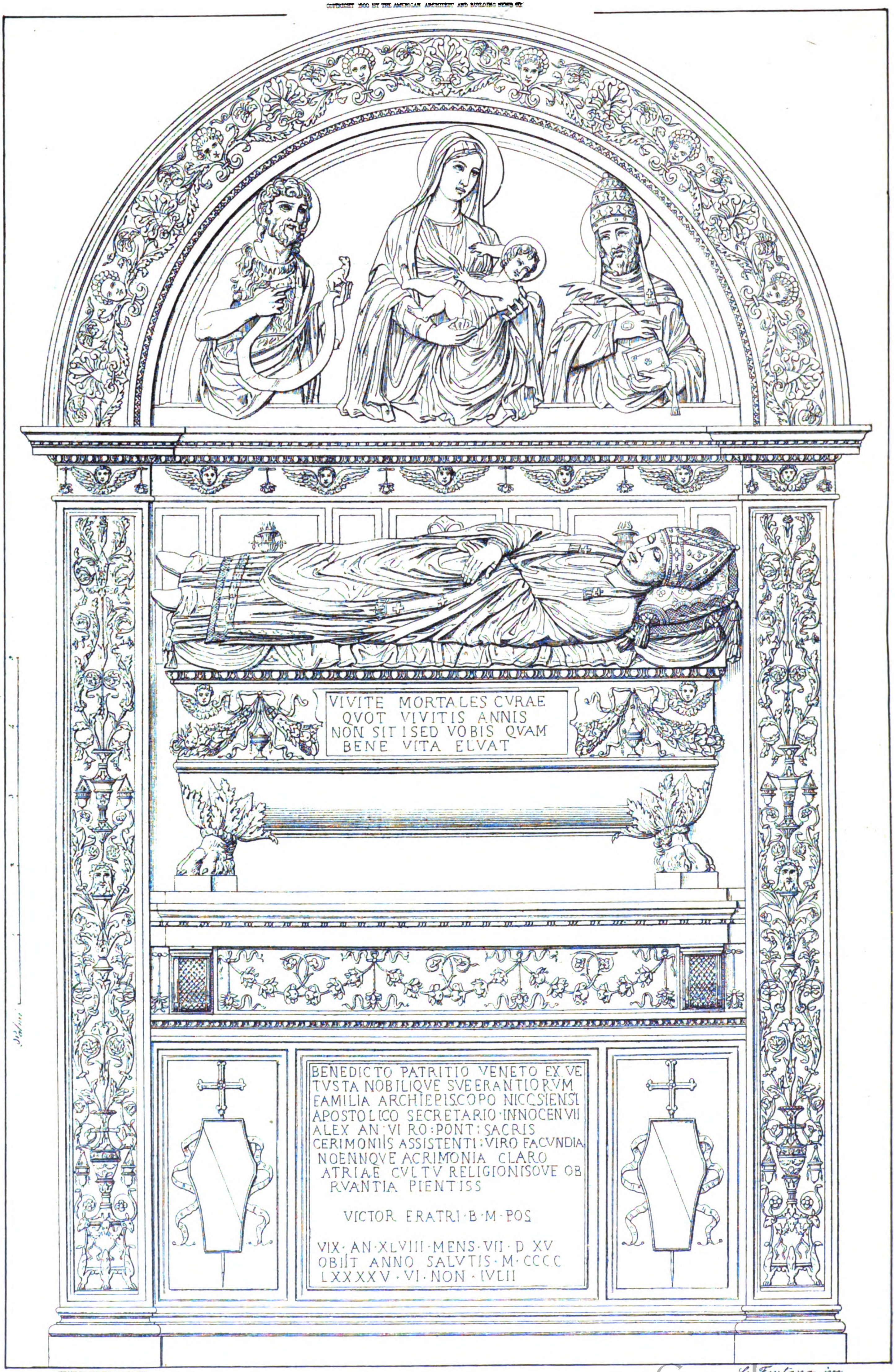
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TOMB OF BENEDETTO SUPERANZIO, BISHOP OF NICOSIA, IN THE CHURCH OF STA. MARIA SOPRA MINERVA, ROME.

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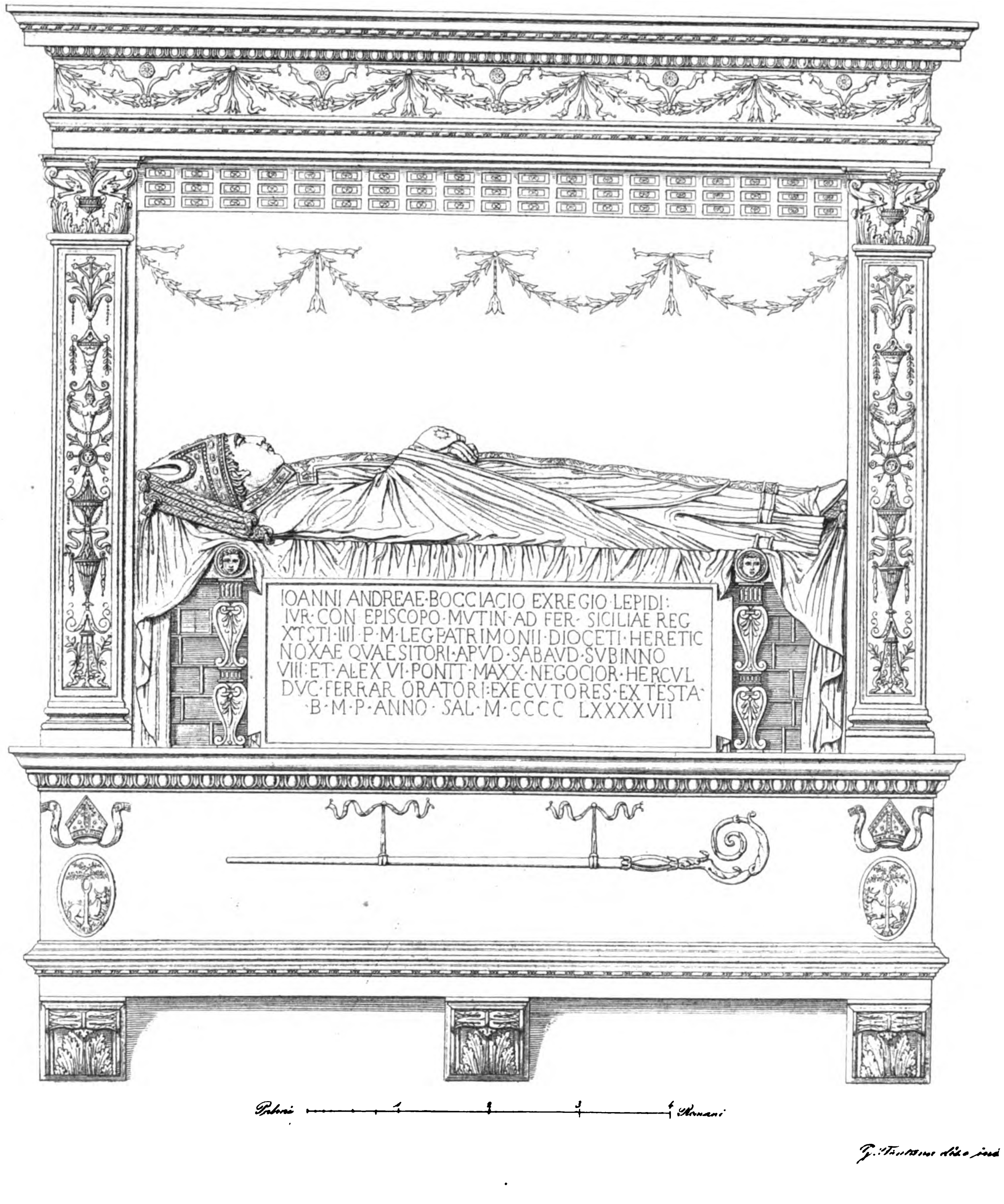
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XTSTI·IIII·P·M·LEG PATRIMONII·DIOCETI·HERETIC
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HELIOTYPE PRINTING CO., BOSTON

TOMB OF BISHOP BOCCACCIO, IN STA. MARIA DELLA PACE, ROME.

American Architect and Building News, Jan. 27, 1900. No. 1257

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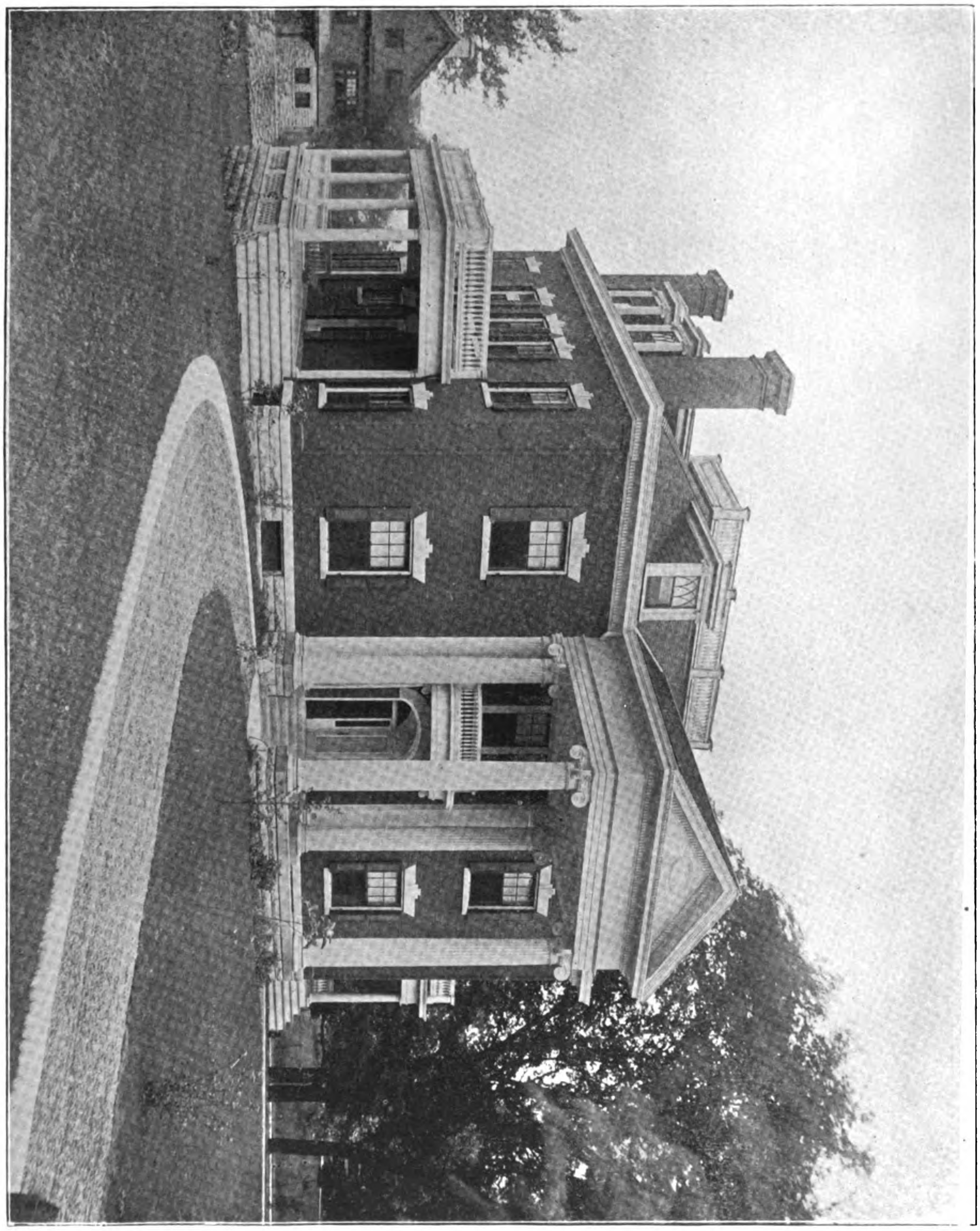

House of L. D. Drewry, Esq., Cincinnati, O.
Elzner & Anderson, Architects.

AMERICAN ARCHITECT AND BUILDING NEWS, JAN. 27, 1900 No. 1257

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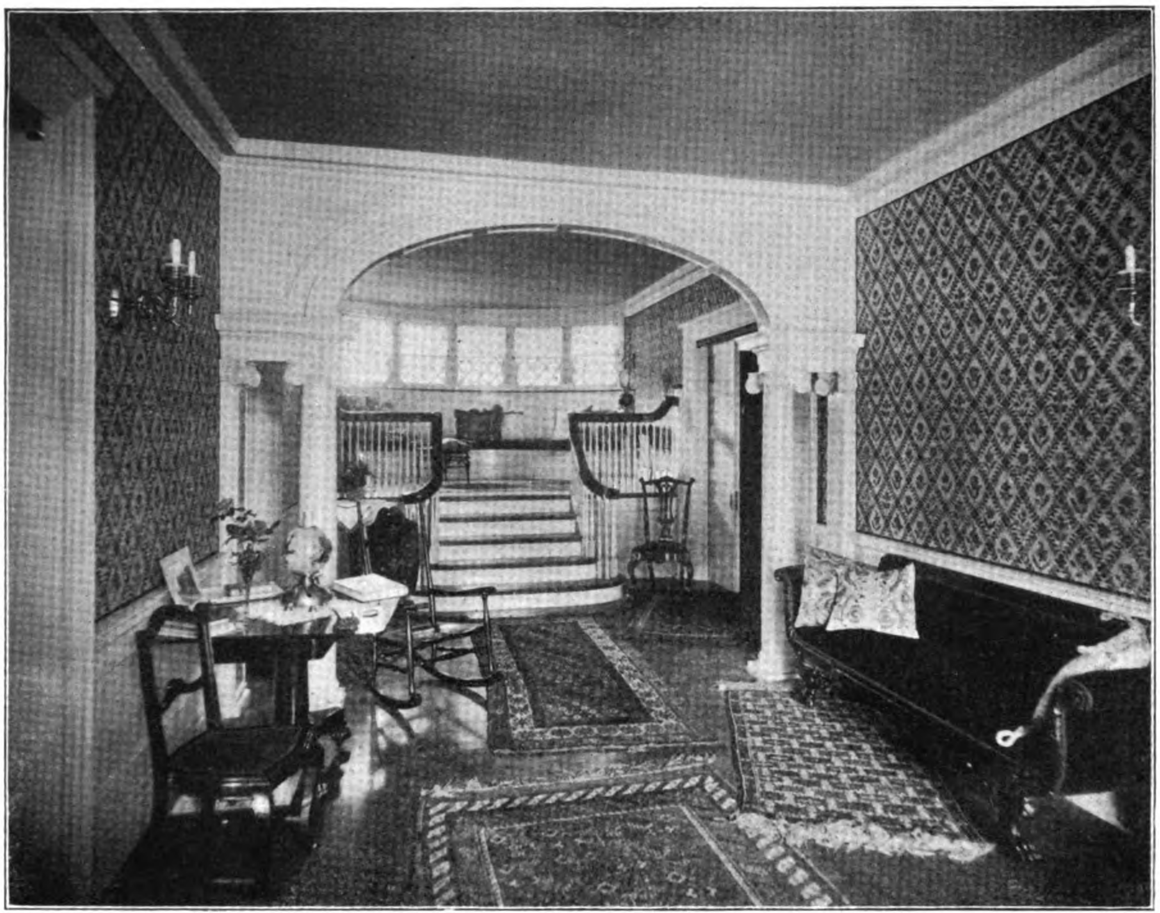
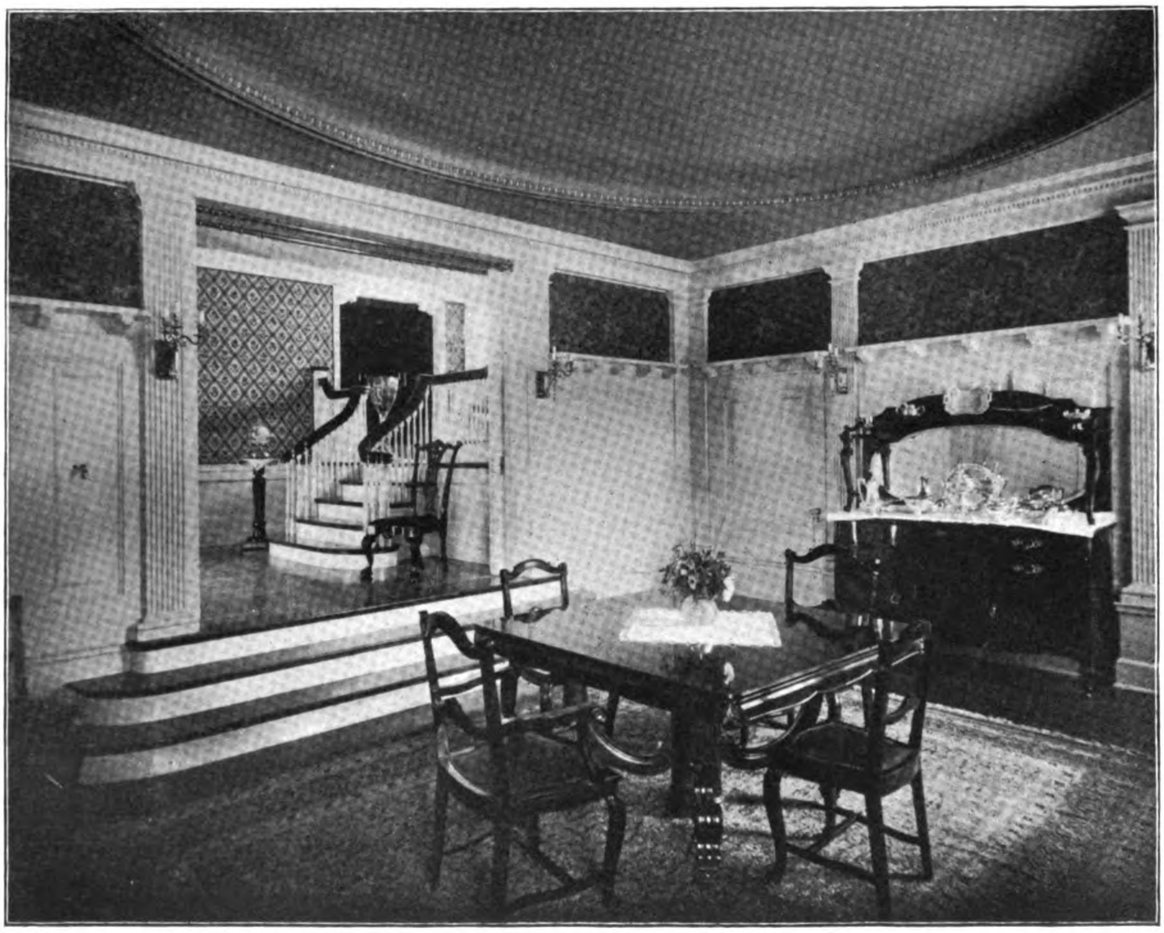
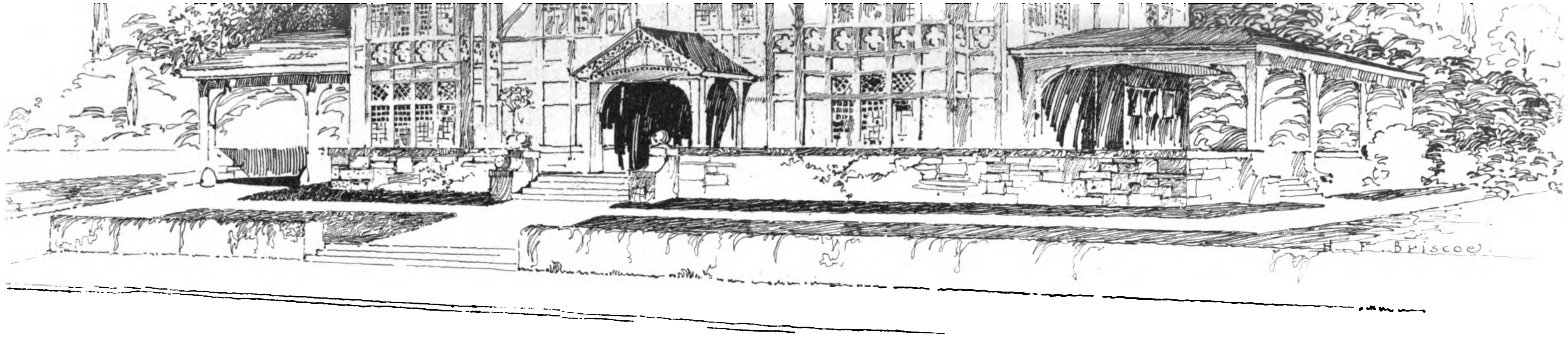
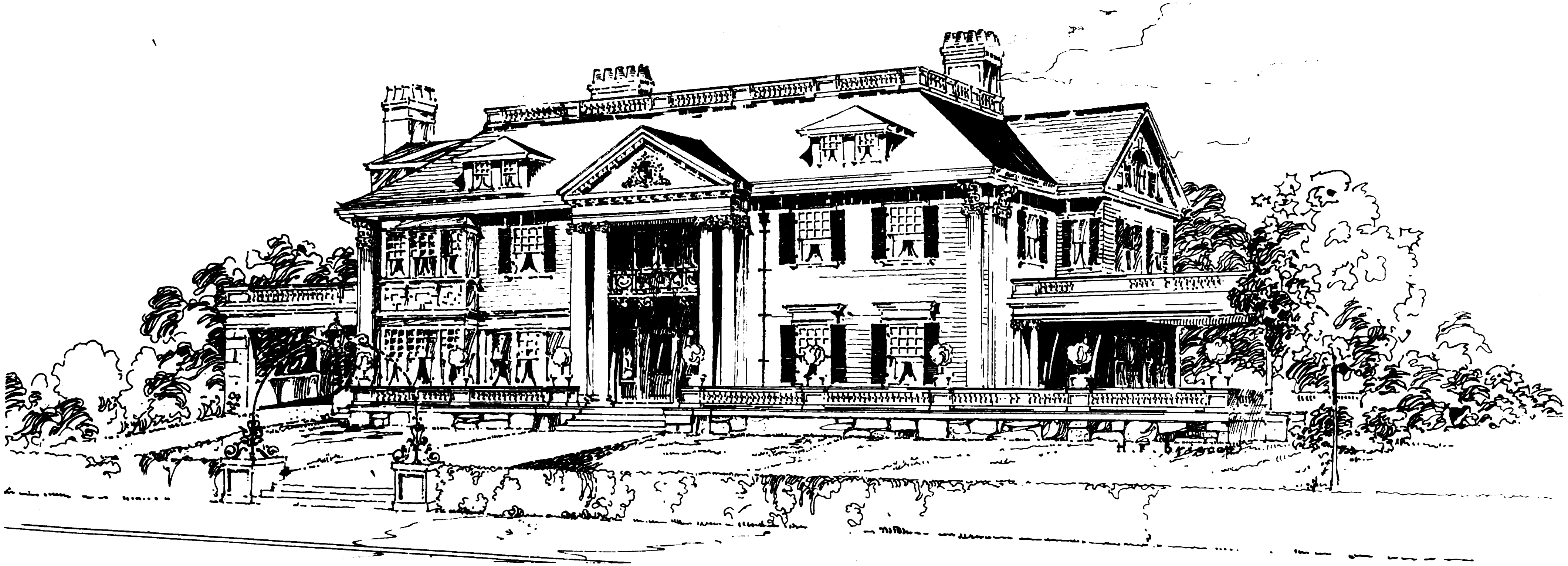




THE DINING-ROOM: HOUSE OF L. D. DREWRY, ESQ., CINCINNATI, O.
ELZNER & ANDERSON, ARCHITECTS.





ALTERNATIVE SKETCHES FOR A HOUSE AT MANCHESTER, MASS.

C. H. BLACKALL, ARCHITECT.

HELIOTYPE PRINTING CO., BOSTON

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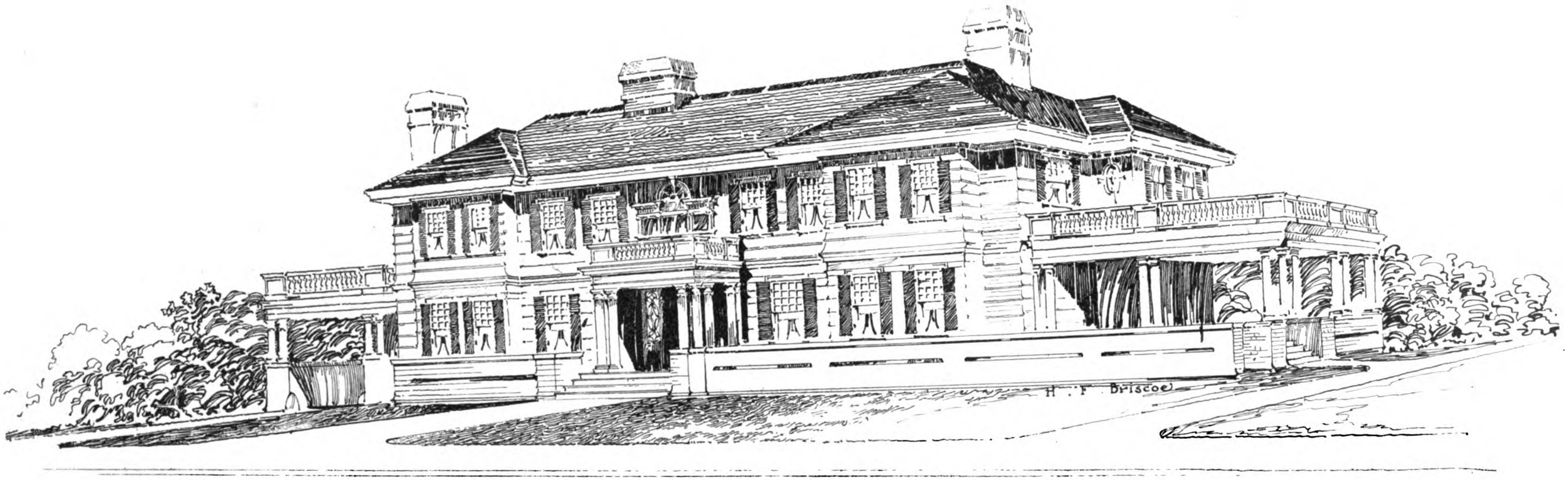

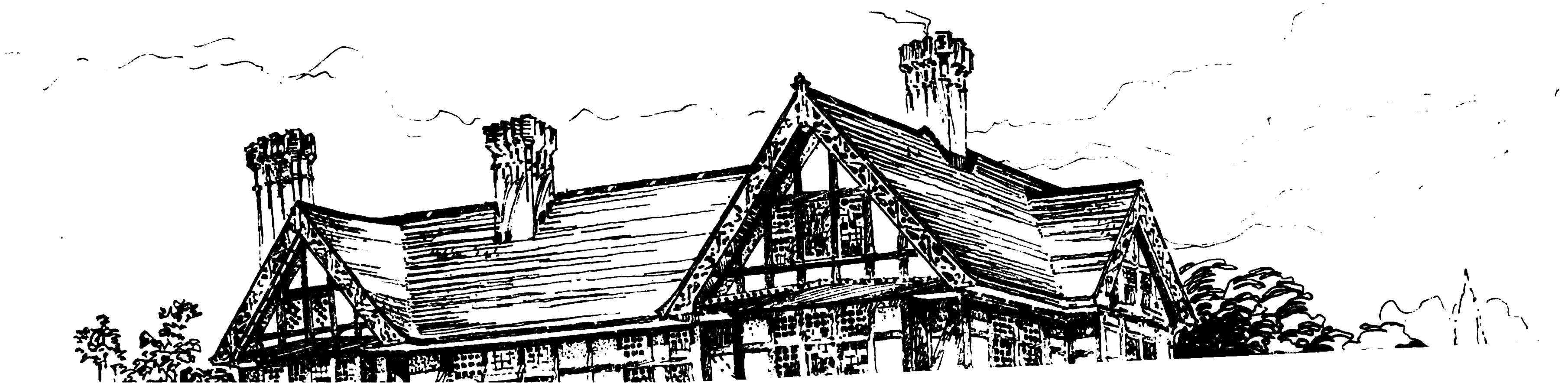

GAS CONFLAGRATIONS.

IN the New York *Evening Post* there was published last week the following communication which should have the widest publicity, for, as the editor says, "coming from an authority, this note of alarm should attract widespread attention from citizens and public officials." —

"*Sir:* The letters in recent issues of the *Evening Post* considering the leakage of gas in distribution as a public danger and a public nuisance show that attention is at last attracted to this great and increasing evil. The facts have been so skilfully concealed that even those whose business it is to investigate happenings of public interest have failed to note the evidences of the magnitude of this evil, and of the extent to which it menaces life and property.

"For example, the burning of the Windsor Hotel, with its appalling loss of life and its many distressing incidents, was a wasted lesson. That this was a typical gas-fire, due primarily to the leakage of gas from street-mains into the cellar and basement, and immediately to the accidental firing of this accumulation of gas in partitions and under flues, was known to every gas-man in New York, and to a great many people not connected with the business; but in all the newspaper discussion of that event I do not remember to have seen the real explanation of the phenomena of the conflagration hinted at.

"There was a great deal of talk about flimsy and combustible construction and the lack of fireproof-materials in the building practices of twenty or more years ago. Those who knew the building well — and I knew it from cellar to roof — recognized the fact that, while in no sense fireproof, nor even of slow-burning construction, there was nothing in the building itself or its furnishings to carry flame from story to story and from street to street, as it would follow a powder-train. The building was saturated with gas.

"We find like phenomena in the case of the fire which destroyed the dwelling and thirteen members of the family of Mr. Wallace C. Andrews. In this instance an especially well-built house of the first class was swept by fire from basement to attic, with such suddenness that Mr. Andrews was caught on the stairs and shrivelled to a cinder while trying to descend from the second floor to the parlor. Only gas could explain such a casualty.

"Among perhaps a hundred examples of gas-fires which have occurred in this city within a year and a half, the cause was evident enough, but no one looked for it, and those in a position to sound the danger-signal failed to do so. Even in so unmistakable an instance as the destruction of the Frischen house last September, the fact was noted with no recognition of its significance. In this case a paper-hanger was preparing for a day's work in the basement of the Frischen house, and struck a match to light his pipe. Instantly the house was wrecked, and the dwellings on either side badly damaged. The paper-hanger was killed. Before night the gas company occupying that street had a temporary main in place, and its officials, when questioned, admitted that they 'had long been uneasy' concerning the old main. A suspicion of structural weakness in one truss of the elevated railroad, or one case of bubonic plague in New York, would fill the newspapers for a week, and create something like a panic; but the enormously greater and ever-present danger to life and property attending the leakage of gas from broken and defective mains and service connections furnishes only occasional paragraphs.

"Even the National Board of Underwriters, whose members have paid millions of dollars in losses for gas-fires, have become aware of this hazard only lately. Their circular of December 28 was a startling document, but it contained an amusing oversight. The committee, in discussing the special fire-risk due to gas-leakage under asphalt and other impervious pavements, forgot that in winter all pavements are impervious, and that a few inches of frost penetration as effectually prevents the transmission and escape of gas as a poultice of asphalt or a surface of stone.

"The individual citizen should understand that there are risks incident to gas-fires which the underwriters cannot assume — the casualties which usually attend them. I can say from personal knowledge that there are miles of dwellings in the residence streets and avenues of New York which are distinctly unsafe for occupation for this reason. As a rule, gas which has filtered through the ground has very little odor, often none at all. Uncarburetted water-gas is odorless; carburetted water-gas in passing through the earth leaves behind most of its added illuminants, which impart its characteristic smell. What passes is a compound of hydrogen and carbonic oxide, highly inflammable.

"The effect of gas-main leakage on the public health has never been investigated. Probably it is much more serious than has yet been realized, and it would seem to come under the purview of the Health Department as a matter in the highest degree 'dangerous to life and detrimental to health.' From this point-of-view, it is a very much more serious public nuisance than many of those which interest the Board of Health a great deal more.

"What the leakage of the mains of our city gas-companies is seems to be a matter of conjecture. No doubt it is more in New York than in London. In London it averages over half a million cubic feet a mile of main per annum — which is low as compared with Glasgow, where it reaches the surprising figure of 1,642,000 cubic feet. Philadelphia has had a leakage of 871,000 cubic feet in one year. It is safe to say that the gas-main leakage in New York materially exceeds half a million cubic feet a mile per annum, and no doubt the committee of the City Club was within the truth in saying: 'In parts of this city the loss is probably in excess of a million cubic feet per mile per annum.'" E. N. T.

NEW YORK, January 13, 1900.

PERSIAN TILES.

THE student of the arts, industries and handicrafts of Persia receives but little assistance from the writers of either ancient or modern times. Poets, historians, philosophers, romancists of classic fame never condescend to analyze or interpret for posterity the avocations or the labors of the people among whom they lived. They were, nevertheless, the slaves of the situation, and had to mould their style and subjects so as to procure the favor and patronage of kings. To magnify events and intensify their meaning and effect in all the vivid hues of oriental coloring, was the aim and business of the historian. His work has one recommendation: it is drawn to a scale. Everything is colossal, and to those not acquainted with his methods he appears to be impartial. Success or disaster, victory or defeat, prosperity or calamity, feasting or mourning, all receive the same treatment. Nothing could be small, nothing insignificant. His imagination, not his judgment, secured the favor and earned the reward. It is not, therefore, surprising to find him silent on the minor, yet practical, realities of the national life.

To trace the course of any industry in Persia which has survived the ravages of time is an interesting study. The industrial activity, though unnoticed by the records, is very closely interwoven with the texture of the national life, and in its pictorial aspects reflects its peculiar and dominating characteristics. It will, moreover, be found that where the skill of the artist has been united to the handicraft of the artisan, the product has taken firm hold and has remained, under various forms and degrees of excellence, through every national, dynastic and religious change. This proposition receives its most practical illustration and proof in the industry associated with the manufacture of porcelain, glazed and encaustic tiles. Their invention lies far back in the twilight of history. They have been excavated in their almost original lustre from the buried cities and entombed palaces of Babylonia, Persia and Media, and are now the treasures of the museums of the West.

Tiles, in their pictorial aspect, have had considerable variety of form and representation. In one instance a tile contains a complete picture, while in another it may form a small section of a large composition.

In the early stages of the art the surface of the tiles appears to have been generally smooth and flat, while in later developments raised or embossed figures have entered largely into the design, especially for mural and frieze ornamentation. The æsthetic idea was generally modified to represent the character, the predilections, and the policy of the reigning monarch of the period. Warriors in complete armor, hunting, feasting, and religious devotions diversified the illustrative scenes. The artistic perceptions, though not always correct, have been generally free from the blemishes and luxurious depravity which have defaced other domains of art.

In the superiority of materials, in the delicacy of design, in the beauty of coloring and perfection of finish, nothing has, perhaps, equalled the work of the thirteenth, fourteenth and fifteenth centuries of the Christian era. The tiles produced during this period were generally devoted to the decoration of mosques, holy places, shrines and tombs of saints of the Mohammedan faith.

The centre is composed of flowers or geometrical figures, and the border consists of written passages from the Koran. A golden tint pervades the whole surface, sometimes united with a shade of blue, giving to the design a peculiar softness and charm. The materials and the method of producing this characteristic are now unknown, and hitherto no attempt to reproduce it has been successful, either in Persia or Europe. One tile manufacturer in Teheran, after experimenting for many years, seems to be on the path of success.

How this beautiful art was lost to the world is a question often asked, but without eliciting any satisfactory answer. It is, however, generally known that certain departments of art workmanship were in former times confined to small communities, and not infrequently to the members and branches of one family, who looked upon themselves as close guilds and the possessors of special secrets, rights and privileges. This gave them profitable advantages, but it exposed their craft to absolute extinction. It is therefore not unreasonable to conclude that either by famine, pestilence, the sword or exile the art and the artist perished forever. Twenty years ago examples of this work could be bought for a trifling sum, but at the present time the finer specimens command ridiculously high prices.

It should be noted that vessels of household use, especially vases, ewers, basins and dishes, were made of the same materials, with the same glow and tint of coloring, but, being more delicate in texture and more fragile in form, very few examples remain.

At the present time two classes of tiles are made, the plain and the pictorial,— the former in a variety of shades for flooring, and the latter chiefly for mural decorations. As a general rule, tiled floors consist of alternate white and colored rows, though some are laid in composite designs. The masonry of the gates of Teheran, the domes of mosques and shrines, and some public buildings are overlaid with variegated tiles in arabesque or mosaic designs. The effect is graceful, though decidedly oriental. The thickness of the tile varies from two-thirds of an inch to three inches. Those used on the outside of buildings are the thickest.

The material used in the composition of the groundwork consists of nine-tenths of pulverized quartz to one-tenth of strongly-adhesive clay, and the glazing is compounded of flint and potash. All the minerals used in the manufacture of tiles and porcelain for groundwork, glazing and coloring are found in the country.

With our preconceived notions of complicated manufacturing processes, it is difficult to imagine that the most beautiful carpets in the world are the product of the gypsy's tent; or that the glowing surface of the ornamental tile can have received its shape, color and hardening in a mud hut, with no more machinery than a pestle and mortar and an ordinary knife. In such surroundings, organized-labor troubles have not much scope for operation.

No sanitary laws exist for the regulation of workshops, or even a general inspection of the conditions of living and habitation. In this respect every man is a law to himself.

No insurance society has so far been organized in Persia, either for life or property, though some English companies insure goods in transit in the interior, and a Dutch agency is trying to introduce the system of life insurance.

The social conditions and religious prejudices and restrictions prohibit to a very large extent the employment of female labor in factories or workshops. Carpet-weaving seems to be the only industry in which their services are utilized.

The Persian Government gives no encouragement and lends no aid to native industries beyond being a purchaser of the goods produced. A little help in reviving old arts and supporting modern ones would benefit a large section of the population and give an impetus to the exercise of artistic and mechanical skill.

The tile will continue to be used as a covering and ornament for the domes, cupolas and minarets, both inside and outside of mosques and other sacred buildings, but for houses and public buildings it seems to be gradually falling out of the taste and fashion of the times and giving way to simpler and cheaper materials. For durability it is superior to anything now in use, but the cement by which it is attached to the masonry lacks the proper adhesive qualities, and it often separates and falls away.

The tile business of Persia is very humble and simple. The most extensive is carried on, from pulverizing the quartz to putting the finished article on the market, by the proprietor, his son, and four helpers. Under such industrial conditions not much room is left for the contractor and sub-contractor, and yet I believe such divisions are not unusual.

It is difficult to give an estimate of the prices of tiles, for the variety of shape, ornament and size seem to almost equal the number of tiles produced, and each has a different price. But as a formula to include all, it may be stated that floors, dados, borders, window-seats, etc., can be fitted up from $3 to $15 per square yard.

Hitherto the foreign demand for this product has been comparatively small Orders have been executed for London and Paris. The heavy cost of transport is the chief hindrance to the export trade. So long as the camel, the mule and the ass are the only freight vehicles, Persian industries will labor under great disadvantages. The rates for carriage are for tiles the same as for every species of merchandise, viz.: from eight to twelve cents a ton per mile, which means from Teheran to Bushire, exclusive of customs and commission, $80.

The free and untrammelled adoption by Persia of improved methods of transport and communication, and the development of the resources of the country, are being greatly impeded by monopolies, concessions and conventions, which, instead of infusing new life into native industries and utilizing natural products so as to give increased employment to the population, either cause industries to lapse into a state of decrepitude or inanity, or are used as instruments to foster the processes of decay.

When Persia can shake herself free from these shackles of foreign drags and interference, and give freedom, instruction and help to native enterprises, then and not till then may she hope to take her place as one of the producing nations of the world.

The principal ornamental-tile makers of Teheran may be addressed as follows:

Ustad Ali Mohammad, Hassanabad.
Seyd Habib, Kāshi-paz, Khiaban-i-Ala-ed-Dowlah.

Mosaic work, as understood among us, does not exist in Persia.

John Tyler, *U. S. Vice-Consul-General.*

Teheran, May 8, 1899.

PRINCIPAL MIHRAB OF THE JAMI MASJID, FATEHPUR SIKRI.

THE Jâmi Masjid at Fatehpûr Sikri is the largest and one of the finest buildings in the city. Exclusive of the bastions upon the angles, the building measures 542 feet from east to west to the outside of the *liwân* or sanctuary, or 515 feet 3 inches to the outside of the west main wall and 438 feet from north to south. The general plan chosen by Muhammadans for their mosques has been adhered to. In the middle is a large open court, measuring 359 feet 10 inches by 438 feet 9 inches, surrounded on the north, south and east sides by spacious cloisters, 39 feet in depth, and on the west by the *liwân* itself, 288 feet 2 inches in length by 65 feet deep. It was erected in A. D. 1571.

On the north, south, and east sides of the quadrangle are large gates. That on the south, the Buland Darwaza, is the largest. It was erected towards the close of Akbar's reign to commemorate his victory over the Dakhan, and in all likelihood replaced another gate designed more in accordance with those on the east and north sides of the courtyard. The Buland Darwaza is the highest and grandest gateway in India, and ranks among the biggest in the world. It stands on rising ground, and this adds considerably to its majesty. In height it is some 134 feet, measured from the pavement in front of the entrance, or, if to the bottom of the steps approaching it, 176 feet. In width the gate is 130 feet across the front. It is built in the form of a semi-octagonal bay. In the centre is an embowed porch or portico, in which are three portals leading to the masjid quadrangle. The centre one is larger than the others, and forms the principal entrance. The others are smaller, and lead into rooms built in the sides of the portico. The smaller entrances are oblong in shape, and are enclosed by architraves in stone and marble. The head of the door is closed by two stone brackets, 2 feet 1 inch high, 2 feet 7 inches in length.

On the under side, the brackets are cut into three tiers or steps, and beneath the lower and upper tiers diminutive carved brackets are introduced, while, under the middle, there is a circular pendant, enriched with leafage, beading, etc., with a square cap. The front face of the bracket is divided into six panels. Those nearest the architrave are filled-in with carved-leaf ornamentation in relief, while the others are occupied with crosses of leaves contained within foliated figures raised from the flat surface of the panel.

The lintels over the doors are supported by the brackets and are divided into nine small panels filled with leaf-carving. These are the only doorway-brackets in Fatehpûr Sikri treated in this manner, the front surface generally being quite plain, as in Jodh Bâi's palace, or ornamented with a mass of carving, as seen in Bir Bâl's house.

We have taken our illustration from the Technical Art Series, to which also we are indebted for our descriptive letter-press.

The plate is an elevation of the principal *mihrâb*. The principal *mihrâb*, as the illustration shows, is surrounded by a broad rectangular sunken architrave starting from a flat geometrically-carved base, painted a deep blue, and sculptured with verses from the Qurân, in raised Arabic characters overlaid in gold. Beneath the transverse head of the architrave is a four-centred and stilted arch delicately carved on the face with a rich undulating scroll in relief, between two narrow hexagonal-shaped mouldings, ornamented with the chevron, springing from balusters resting upon the imposts, which are painted with floral-scrolls in white, red, and blue upon a chocolate ground. Around the soffit of the arch is a delicately-carved cusping, springing from pretty brackets just above the impost.

The space beneath the arch and the spandrels above are embellished with rich floral designs in color. In the centre of the spandrels are carved-leaf bosses overlaid with gilt. Beneath the big arch is a pentagonal-shaped aperture half domed over on the top, and recessed 4 feet 3 inches from the outer surface of the wall. Across the upper portion of the aperture is an archway supported on brackets standing on semi-octagonal shafts upon the jambs of the openings. The front of the arch is enriched with scroll-carving, and the spandrels with bold leaf-carved pateræ surrounded by a field of raised quatrefoils overlaid with gold on a dark-blue ground. Confining the sides of the spandrels is a rectangular border carved with a raised chain-pattern and flowers. Enclosing the whole is a geometrically-carved architrave in red sandstone, inlaid with white-and-black marble. — *Indian Engineering.*

BOOKS AND PAPERS

WE have only one fault to find with Mr. Maginnis's charming little book[1]; it is too small. In the first place, the knowledge and earnestness that he puts into his teaching of a very difficult art deserve more space than he gives them; and, in the second place, architectural draughtsmen, whose perspective sketches must usually be on a large scale, would be glad of some examples of work on something the same scale. However, what we have is so good that it is hardly reasonable to ask for more, and, perhaps, in a second edition, intended particularly for architects, we may have more ample pages, with, possibly, the substitution of work strictly concerned with architecture or landscape, for which there is plenty of available material, for the Gibson heads and the poster cuts, which, while they have interest for illustrators, are less useful to the draughtsman in an office than other examples that might be given.

Mr. Maginnis begins with some practical directions to the draughtsman in regard to the ink and pens to be used, and the method of stretching paper, and these are followed later by suggestions in regard to composition and values, and technical effects of rendering, which are admirable in every way, and are not less valuable on account of the emphasis with which he insists upon the necessity for sketching from nature, as the basis of an effective individual style. His points are illustrated by reproductions of pen drawings, very carefully selected, by Lalanne, Pennell, Gibson, Railton, Vierge, Rico and others. Perhaps Norman Shaw, Samuel Prout and Ernest George might have been added to the list with advantage, and some valuable suggestions might certainly have been obtained from Turner and Albert Dürer, but students will be able to extend their knowledge almost indefinitely in such directions as they choose. It is interesting to notice that the painters such as Raffaëlli, Rico and Lalanne show in their drawings, as a rule, the best understanding of composition, concentration of interest, and effects of light and shade; while those who are etchers also, like Lalanne, are conspicuous in what Mr. Maginnis calls "economy of means." A Whistler etching would have given an example of this, even more forcible than the Lalanne drawing which is reproduced, but the Lalanne sketch has the advantage of showing a building which is rendered with a delicacy and architectural feeling unknown in Whistler's works.

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[1] "*Pen Drawing,*" an illustrated treatise. By Charles D. Maginnis. Boston: Bates & Guild Co. $1.50.

It would, however, be an endless task to suggest all the additional illustrations with which the book might have been enriched, and to try to do so would be ungrateful to the author, who, feeling himself obliged to keep his book small and inexpensive, made from the available material a selection which deserves nothing but praise.

ILLUSTRATIONS

[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

SKETCHES FOR A HOUSE AT MANCHESTER, MASS. MR. C. H. BLACKALL, ARCHITECT, BOSTON, MASS.

HOUSE OF L. D. DREWRY, ESQ., CINCINNATI, O. MESSRS. ELZNER & ANDERSON, ARCHITECTS, CINCINNATI, O.

INTERIORS IN THE SAME HOUSE.

TOMB OF BENEDETTO SUPERANZIO, IN THE CHURCH OF STA. MARIA SOPRA MINERVA, ROME, ITALY.

THIS and the following illustration are copied from Giacomo Fontana's "*Raccolta delle migliori Chiese di Roma e Suburbane.*"

TOMB OF BISHOP BOCCACCIO, IN STA. MARIA DELLE PACE, ROME, ITALY.

[The following named illustration may be found by reference to our advertising pages.]

PRINCIPAL MIHRÂB [THE NICHE MARKING THE DIRECTION OF MECCA] OF THE JÂMI MASJID, FATEHPUR SIKRI, INDIA.

FOR description, see article elsewhere in this issue, which, with this plate, is copied from *Indian Engineering.*

[Additional Illustrations in the International Edition.]

WEST FRONT OF THE FREE MUSEUM OF SCIENCE AND ART, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA. MESSRS. COPE & STEWARDSON, WILSON EYRE, JR., AND FRANK MILES DAY & BROTHER, ASSOCIATED ARCHITECTS, PHILADELPHIA, PA.

[Gelatine Print.]

COURTYARD OF THE SAME.

[Gelatine Print.]

MAIN ENTRANCE OF THE SAME.

[Gelatine Print.]

ENTRANCE TO THE PALACE OF JUSTICE, MUNICH, BAVARIA. HERR FRIEDRICH THIERSCH, ARCHITECT.

[Gelatine Print.]

HOTEL DE L'EUROPE, LEICESTER SQUARE, LONDON, ENG. MR. WALTER EMDEN, ARCHITECT.

DESIGN FOR CARTWRIGHT MEMORIAL HALL, BRADFORD, ENG. MESSRS. H. & E. MARTEN, ARCHITECTS.

NOTES AND CLIPPINGS

DRIFTWOOD ON THE ALASKA COAST. — One of the greatest curiosities noted by travellers in Alaska is the wonderful haven of driftwood on the coast between Yakatag and Kyak Islands, some twelve hundred or fifteen hundred miles northwest from Seattle. The constant deposit of logs and driftwood in this particular spot, which has been going on for hundreds, perhaps thousands, of years, is due to the phenomena of the tides, the Pacific Gulf Stream, the mysterious ocean-currents and peculiar formation of the shore-lines at that point. Logs and timbers are readily identified there as having come from Japan, China, India, and other parts of Asia, as well as from California, Washington, and other parts of the American continent. There are fine logs of the camphor-tree, the mahogany, the redwood, and the pine in this driftage. Some of those from the State of Washington bear the names of the men who felled the trees and of the saw-mills for which they were destined but never reached. Logs 8 feet in diameter are in this novel woodyard, and some entire trees 150 feet long are there, uplifted by the roots, cast into the sea by some terrible tempest, and sent floating around the world. Often persons on the beach descry big trees floating shoreward, with fantastic roots above the waves. One beach after another has been formed by the floating timbers, and a little distance back from the shore the deposits are so old that the wood in some places is petrified, while a little deeper in the earth it has turned into coal. The newer logs are without bark and as hard as stone, due, it is thought, to their long immersion in salt-water. They have all taken on a whitish appearance. In places the timbers are piled 20 feet high; at other points they rise to a height of only 4 or 5 feet. Under this wonderful beach are found large quantities of dark, ruby sand, rich in fine particles of gold, for the separation of which no successful process has yet been discovered. — *Chicago Times-Herald.*

EXAMINATION FOR ARCHITECTS. — The recent decision of the American Institute of Architects to enlarge its membership only through the examination of applicants makes of interest the following statement concerning the last R. I. B. A. examinations: Intermediate examinations of candidates for registration as student R. I. B. A. were, it was reported, held simultaneously in London, Birmingham, Bristol, Manchester and York on the 7th, 8th and 9th of November, 1899. In all 65 candidates were examined, with the following results: —

	Examined.	Passed.	Relegated.
London	40	22	18
Birmingham	5	4	1
Bristol	3	0	3
Manchester	10	5	5
York	7	4	3
	65	35	30

Preliminary examinations, qualifying for registration as Probationer R. I. B. A., were held simultaneously in London, Birmingham, Bristol, Cardiff, Dublin, Manchester and York, on the 7th and 8th of November, 1899. Of the 154 candidates admitted, claims for exemption from sitting were allowed to the number of 34. The remaining 120 were examined, with the following results: —

	Examined.	Passed.	Relegated.
London	70	33	37
Birmingham	7	4	3
Bristol	7	4	3
Cardiff	7	3	4
Dublin	2	1	1
Manchester	14	8	6
York	13	10	3
	120	63	57

The successful candidates, together with those exempted, make a total of 97 newly-registered probationers. — *The Architect and Contract Reporter.*

A PILE-DRIVING TEST. — At a test made at New Quay, Royal Victoria Dock, London, early in last year, it was found that as the work went east the strata became softer, piles going 2 inches to four 8-foot blows of an 18-cwt monkey at 36 feet and 38 feet in the ground, against 5.5 inches and 1 inch per four blows farther west. Wishing to determine accurately the safe load and the greatest resistance, as formulas on pile-driving vary considerably, the engineer decided to make a test. One of the worst piles, a pile going 2¼ inches to four 8-foot blows, when driving was stopped, was accordingly loaded with steel joists 14′ x 6′, 56.8 pounds to the foot. The pile was 37 feet long, pitch pine, 12½′ x 11½′, 36.8 cubic feet, there being 36.1 feet below the cut-off mark. The sectional area was 143.75 square inches, and the weight of monkey 18 cwt. A few pieces of timber were placed under the ends of the joists to support them during the process of loading, but these pieces were never allowed to become tight, the whole load being supported at the centre by the pile under test. A small indicator was arranged just above the level of the ground to record the deflection: —

At 10	tons.	No deflection.	Remained	thus	24 hours.
" 20	"	1-16 inch.	"	"	48 "
" 30	"	1-16 "	"	"	0 "
" 37.5	"	3-16 "	"	"	7 days.
" 56.9	"	1-4 "	"	"	4 weeks.

At the end of this time there was no further deflection. On the load being removed the pile rose $\frac{3}{16}$ inch, showing that a great deal of the deflection was due to the fibres of the timber being put in compression. — *Engineering.*

Freezing a flooded Mine. — The Belle Isle Salt Company, operating at Belle Isle, in Iberia parish, La., and owned almost entirely by New York capitalists, has decided to make a desperate effort to recover $400,000 expended on machinery and sinking shafts in the salt-mine, all of which is apparently lost by striking a spring which has flooded the mine to the mouth. The stockholders have raised $32,000, which will be expended in freezing the water in the mine into a mass of ice, which will then be excavated. This, it is expected, will permit of the closing and damming of the spring which has flooded the mine, before it can do any additional injury. The sinking of the shaft disclosed a deposit of fine rock-salt, which is very valuable, if flooding can be prevented. — *Fire and Water.*

A Permanent Pontoon-bridge. — Owing to the frequent settlement of the land in the salt-districts it has always been found a difficult matter to maintain in proper order bridges and other similar structures. To meet this difficulty the engineer of the Weaver Navigation, in constructing two swing-bridges over the river at Northwich, has so designed these that instead of resting on the land the weight of the bridges is carried on steel pontoons floating in the water, and the bridges are therefore independent of any settlement of the land so far as their foundations are concerned, and they are so built as to be easily adjusted to any settlement of the ground at the two ends. These bridges are also opened and closed by electric power, being the first to be so operated in this country. The two bridges have cost £25,000. — *Nature.*

An Ingenious Canadian Bridge. — A unique feat of engineering is described by an exchange as having been accomplished in the bridging of a narrow strait connecting Canso Harbor and Chedabucto Bay, in Nova Scotia. The place is known as the "Tittle," and the difficult problem presented was the construction of a bridge that would not obstruct navigation nor require the expense of erecting a drawbridge and employing the services of a tender. The manner of getting around the difficulty is thus described: The bridge is built upon stone-ballasted piers and in the middle of the central span a clear-cut of about eighteen inches in width crosses the whole superstructure. The boats that use the "Tittle" are fishing-smacks, with pole-masts and without shrouds or other side-rigging. Consequently they have only to be steered so as to bring their masts in line with the opening in the bridge, when they readily are poled and pushed through. The spreaders at the opening prevent the flapping sails catching and tearing. Traffic is much greater by water than by land. When the infrequent vehicle wishes to pass, a hinged board across the width of the bridge is raised up and covers the small chasm. As soon as the wagon has gone over this the driver is expected to throw back the hinged board. — *Railway Age.*

Mansions of Genoa. — In the Via Balbi, the Strada Nuova, the streets of palaces, some half-dozen of those vast mansions on either side are quite enough to form a street; and as you pause at door after door of the six, you look in upon a splendid vista of arches and columns, perhaps enclosing a green nest of orange trees, or widening into a magnificent court, from the ample marble sides of which rise the staircases which lead to the house. Then, though they are alike, there is a variety in each: one springs upwards on graceful marble columns to a domed roof, and beyond throws only some three or four broad low steps between you and the orange-garden, against the fresh green of which the pillars shine. Another reveals to you its miniature quadrangle, cloistered round at the top of a short but princely staircase, down which on either side a pair of gigantic lions have been rushing, when some sudden spell arrested their course and fixed them there. Next door the prospect widens, and one court draws itself out within another, with perhaps a gallery and grand balustrade behind, from which the inmates, cool in the shadow of their own lofty roof, could hear their fountain trickle as it played. Whosoever would see the fountain, if it chances to be a work of note, or would examine the frescos if there happen to be any about hiding among the columns, or would simply look at a kind of architecture so liberal and princely, may enter as he will; and if there is a collection of pictures above, which is exceedingly probable, is free to penetrate into the salons without either fee to pay or warrant of respectability to offer. These open courts and columns are a somewhat handsomer way of withdrawing oneself from the street than by building a dead brick-wall between the thoroughfare and one's gentility; and it is these princely entrances which gain for Genoa her distinction of "La superba." The buildings themselves are no doubt grand and imposing, but in this is the characteristic and remarkable feature.—*The Architect.*

The projected new Front for Milan Cathedral. — The Cathedral of Milan has one façade, dating from the sixteenth and seventeenth centuries, which has been declared by some to be out of accord with the rest of the building, and, therefore, offending. A worthy citizen of Milan who held this opinion died in 1884 and bequeathed about four hundred thousand lire towards the building of a new façade, but he attached the proviso that the work should be commenced within twenty years of his death. A competition was held, in which architects from all parts took part, but it proved unsatisfactory and, as the result of a second competition, the designs of a young Italian architect named G. Brentamo were accepted in 1888. It appears that an attempt was made to begin the work at once; but the architect died suddenly, and this upset matters to such an extent that nothing has been done since, and as there only remain a few years of the stipulated limit of twenty, the cathedral authorities are beginning to feel anxious about their restoration, especially as it has been found that the legacy will not nearly cover the expenditure entailed. The artists of Milan, supported by many of the newspapers, are all against having the old façade touched, which, out of keeping or not, is a fine piece of work. This view of the case has no more zealous supporter than the eminent architect Signor G. Beltrami. He says: "This great monument, which occupied many centuries in building, bears the stamp of various ages, shows traces of all the generations which in succession bestowed their labor on it. Each epoch has contributed its share, for good or ill, until our Duomo has become, so to speak, the visible record of the arts throughout the centuries. Unpardonable, therefore, would it be to lay a desecrating hand upon it, or to attempt to modify it with the object of arriving at that unity of style which it cannot possibly possess. Moreover, as the façade now exists, so we have always seen it, so we have learned to love it, with all its beauties, all its faults. Time has laid a coloring hand upon its stones, and clothed them with that mysterious harmony which no human skill can replace or imitate, should this contemplated crime ever be committed." Presuming this to be a fair view of the case, we certainly agree that the substitution of a new façade would be a gross act of vandalism, and in this age of "restorations" the cry of "hands off" the old buildings needs to be taken to heart by all concerned, for too often the hand that touches mars and withdraws forever the charm and beauty which Time alone can give. — *The Builders' Journal.*

Death of M. Paul Sedille, Architect.— Among the French architects of our time there was not one who was more kindly disposed towards English work than Paul Sedille. It is, therefore, with much regret we announce that he has passed from life at his house in the Boulevard Malesherbes in his sixty-third year. It was impossible to be in M. Sedille's company for a short time without feeling exhilaration from his joyous spirits. About his ability all were agreed, and clients were glad to make use of his services. He appeared to be recognized as the successor of Charles Garnier. Although not so much of the "gamin de Paris" as his friend, he was a companion whose society all artists could enjoy, and he was eager to employ as many arts as possible in his buildings. He was an enthusiast for color, and the *Printemps* suggests his skill in that respect, as well as his courage in not concealing his employment of metallic construction. In the Exhibition of 1889 he was entrusted with designing the building for the liberal arts. Among his numerous works is the church at Domrémy, which is a memorial of Joan of Arc. Some years ago he wrote interesting essays on English architecture in the *Gazette des Beaux-Arts*, and in reply to some criticism of those shortcomings which were inevitable in the work of a stranger, he sent us a good-humored remonstrance on our severity. He held a prominent place among French architects, and was always ready to defend the interests of his profession. From a man with so much vitality much remarkable work was to be anticipated, but death has put an end to his own and his friends' hopes.—*The Architect.*

The Wasteful "Christmas-tree." — There are divergent views on the alleged injury done by the cutting of young firs to serve as Christmas-trees or for other decorative purposes. J. Sterling Morton, ex-Secretary of Agriculture, started the discussion years ago, and at each recurring Christmas has voiced his plea for the evergreens. One argument made by the St. Joseph *News* is that in the land where the fir-trees grow, they shoot up so thickly that when a large part of them are cut down those remaining are vastly improved. "Nature," this editor says, "is so bountiful in this provision that a hundred times the number of trees cut for the children could be spared without endangering the future forests in such localities." To this Mr. Morton replies in his Nebraska paper, the *Conservative*, that Nature can attend to the business of thinning out the pine and fir forests better than man can. As the trees grow and shut out the light from the lower limbs, the latter drop off, and thus the process continues until in the survival of the fittest the lumberman finds the trees from which he can saw the knotless boards. The facts fortify Mr. Morton's position. Forests which have not experienced man's "thinning out" for Christmas decoration produce unequalled specimens of the long and straight coniferæ. — *N. Y. Evening Post.*

An Electric Smoke-alarm. — A patent has been issued to Mr. Henry C. Baer, of New York, describing an invention having for its object the giving of an audible alarm through the agency of smoke or non-flame-supporting gases such as are ordinarily generated by fire. The device is based upon the principle that a flame of gas or other combustible material is only supported when supplied with a definite amount of oxygen. This principle is utilized by causing the flame to act upon a thermostatic bar included in the electrical circuit with an electric alarm of any well-known form, the circuit being normally open so long as the flame continues, and the arrangement being such that when the flame is extinguished, the circuit will be closed, thereby causing an alarm to be sounded at any desired point. The apparatus consists of a perforated casing containing a gas-flame, supplying heat to a thermostatic bar. Should an abnormal condition take place in the surrounding atmosphere such as is attributable to the presence of smoke, the smoke will be drawn into the casing, the flame will be extinguished from lack of oxygen to support combustion, and the thermostatic bar becoming cooled will close the circuit and sound an alarm. — *Exchange.*

The Monuments of Berlin. — According to the Berlin *Börsen-Courier*, the capital of Germany is the most "monumental" city in the world, boasting of no fewer than sixty-three such memorials. As soon as the "Siegesallee" is completed and other monuments now projected are a reality, the "Athens of the Spree" will be able to boast of at least one hundred. The *Rundschau* adds that this is a little too much of a good thing, as the why and wherefore of not a few of these monuments is not exactly apparent. It is noticeable that, in this centre of the greatest military state of the age, the number of civilians who have thus been honored exceeds the number of military men, there being only twenty-nine of the latter represented, as against thirty-four of the former.

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A VERY important and interesting suit has been begun in the New York Courts. Next to the twenty-story Manhattan Life Insurance Company's building on Broadway is a four-story building, owned by Mr. Crocker. Three distinct surveys of the wall of the Manhattan building adjoining the property of Mr. Crocker are said to have shown that the upper portion of this wall overhangs its base, and, consequently, Mr. Crocker's building, by nearly six inches, while an ornamental cornice at the top of the Manhattan building extends from one to three feet over Mr. Crocker's property. Although it is quite common for the owners of high office structures to decorate the upper part of their buildings with cornices overhanging the adjoining estate, Mr. Crocker objects to the practice; and having, it is reported, been refused the privilege of using the Manhattan wall as a party-wall in case he wished to carry up his building, he objects to being compelled to give up six inches of his land to accommodate the overhang of the wall of the Manhattan building, and in the present suit he requests that so much of the Manhattan building as prevents him from utilizing his land to such height as he pleases may be cut off; or, if this is found to be impracticable or inconvenient, that he may be paid a reasonable price for so much of his land as he is prevented, by the action of the Manhattan Life Company, from using.

THE Manhattan Company makes a rather singular defence to the suit. While it acknowledges that its cornice projects over Mr. Crocker's estate, it says that this is merely a temporary ornament, which can be removed at any time if Mr. Crocker should wish to carry up his building, and it denies that the wall overhangs, saying that this is an appearance due to the settlement of Mr. Crocker's building toward its own. As to its own building, it says that the foundations are on rock, and that any settlement is impossible. If this defence is correctly reported, it should not be very difficult for Mr. Crocker's lawyers to bring it to grief. Every one knows that the settlement, and, still more, the perpendicularity of a wall are matters which depend only to a limited extent on the foundations. It is true that if the foundations sink, the wall which they carry sinks also, but, supposing the foot of the wall to rest on immovable rock, the masonry above, far from being incompressible, is, to a certain extent a plastic, compressible mass, which, as the weight on it is increased in the work of building, sinks to a very appreciable extent, and may move outward as well as downward. In point of fact, this often happens, and walls built in winter, particularly, where the mortar freezes at night, and thaws superficially in the daytime, frequently bend outward during construction even where they were originally built vertically; while many more high walls, carried up with nothing but the bricklayer's plumb-rule for a guide, are found to deviate considerably from the vertical before they reach the top. This deviation is usually outward, as the beams prevent building inward; and, where the natural settlement of a wall by compression of the mortar joints is complicated with an overhang due to the inefficiency of the bricklayers' tools, the result is likely to be an increase in the original overhang. Whether, from these causes or any others, the wall of which Mr. Crocker complains really overhangs his land is a question to be decided by examination with a plumb-line, not by looking at it from the street, or by induction from the solidity of the rock on which it is built; and the court is not likely to inquire into the law of the case until this point of fact is decided. When it is decided, if it proves that the wall really overhangs, the question of whether Mr. Crocker is obliged to give up so much of his property without compensation, to accommodate it, will become of importance. We once built a building in New York, on a lot adjoining one on which was an old brick house. The wall of the house next the lot to be occupied by the new building was eight inches thick, and overhung its base eight inches. The French rule is that a wall which overhangs its base one-half its thickness or more is in a dangerous condition, and must be taken down, and our clients appealed to the Building Department to have the old wall condemned, offering to allow the adjoining owner the use of their new wall. This request was refused, on the ground that it was a scheme to persecute the poor man who owned the old house; and our clients were advised that they could not cut off any part of the overhanging wall, as this would obviously weaken it to a dangerous extent, and that their only course was to shorten their building eight inches, and allow their poor neighbor the use of so much of their land to accommodate his infirm wall. Whether this advice to our clients was based on knowledge by their counsel of the law of New York in such cases, or only on the general principle that juries are likely to strain the facts in favor of the poor man, we never knew; but the Manhattan-Crocker case, supposing the facts to be as asserted by the plaintiff, and only feebly denied by the defence, seems to bring up the issue in the clearest possible shape, and it will be of great interest to architects and real-estate owners to watch the decision.

THE path of Monument Commissions in New York is indeed a hard one. After years of criticisms, suggestions, reproofs, protests and obstructions of all kinds, the Commission for the Soldiers' and Sailors' Monument had at last selected for the monument a site on Riverside Drive which, if not particularly well suited for a monument, seemed at least inoffensive, and had received and opened bids for its erection, when notice was served of two suits to prevent the award of the contract, or the erection of the monument in the place proposed. One of the plaintiffs claims that the monument would "interfere with the flow of light and air" around her house, and cut off the view from it; and, presumably, the other has the same idea. It is hardly likely that these considerations would, in the end, prevent the erection of the monument on the site proposed, but it would be a long time before the suits could be heard, and the matter settled, so that it seems quite probable that the unfortunate monument may start on a fresh series of peregrinations.

THE movement against American noises seems to be progressing very favorably. In Detroit, Cleveland and Carlisle, Pa., the blowing of factory whistles is prohibited, and many cities and even small towns have put a summary stop to the whistling of locomotives within their borders. More than this, the New York Central Railroad has built for shifting trains engines with a noiseless exhaust, which slide about as quietly as the foreign locomotives, instead of deafening everybody within a dozen rods by the cannon-like forced-draught explosions which form, apparently, the delight of American engineers and master-mechanics. If American railways, instead of destroying the value of property near which they pass by the intolerable noise, smoke, sparks and dust which attend their operation, can be made as inoffensive as those in England and France, a great benefit will be conferred on the country through which they pass. The inhabitants of cities, however, suffer most, not only from railroad racket but from many other distressing noises which might easily be suppressed, and should be suppressed at once if the nervous and sensitive Anglo-Saxon race is not to die out and yield its place to the more phlegmatic races. The maddening clang of the electric-car bell, for instance, which is practically useless for preventing accidents, as it is rarely rung to warn a foot-passenger until the car is so close upon him that the sound frightens him nearly out of his senses, should immediately be replaced by the tinkle of a small bell, which, like those fastened to the harness of the horses which once furnished the motive-power of street-cars, should ring constantly while the car is in motion. In this way, and only in this way, can the foot-passenger always be made aware of the proximity of a moving car, and can judge instinctively of the direction in which it is moving and of its speed, and only in this way can those numerous accidents be avoided which come from crossing a track on which is approaching a car which has been concealed by a car going the other way, or by any similar obstruction. In such cases, as the foot-passenger is concealed by the same obstruction from the motor-man of the advancing car, the bell is not rung, and no warning is given, while, with an automatic bell, the warning would be always sufficient. It is said, as an excuse for not adopting this obvious improvement on the present system, that no bell has yet been put on the market which will ring by the motion of an electric car; but a demand for such a device, or the assurance that there would be a demand for it, would bring it into the market at once in a dozen forms.

WITH the resources of the railroads devoted to doing their proper work without splitting the air and the tympanums of the public by useless and costly screeching, banging and roaring, and with the electric cars restricted to a steady and unobtrusive warning tinkle in place of an occasional frightful din, the American public would be able to collect its senses sufficiently to think of its city pavements as an agent in the production of brain diseases. It is true that New York has made some progress in laying asphalt pavements, and Washington, Detroit and other cities have done proportionately still more, but the pavements of Boston would discredit an Irish village; and, even in New York, the difference between the asphalted streets and those in which the weary horses hoist their loads over miles of granite hummocks is yet painful to the patriot. We do not dare to say, for fear of being thought extravagant, how much larger is the load that a horse can draw over an asphalted or wood-paved street than over one laid with granite blocks in the Boston fashion, and, in consequence, how much money the citizens spend every year to hire extra horses to lift their goods over the humps and hollows of the business streets, but it may be observed that in addition to the cost of extra horseflesh, the wear and tear of vehicles and harness, and the loss of time incidental to the use of badly-laid pavements of block stone, every jolt and rattle of the thousands of jolting and rattling vehicles that lumber through our city streets, tortures a nervous fibre in a certain number of people, and to that extent impairs their usefulness and shortens their lives.

WE do not realize in this country the extent to which the arts and sciences are encouraged abroad by prizes, medals and honors of various sorts. In Germany the scientific man is incited to exertion by the prospect of official titles, and by the rewards which business there, more than in any other country, offers to theoretical investigation; while in France, by a pleasant custom, it is the men of learning themselves who distribute the prizes which have been founded by persons who have, as a rule, themselves known the value of appreciation and encouragement to people who have consecrated their lives to the pursuit of knowledge. The last issue of *Le Génie Civil* makes a selection out of the list of prizes just awarded by the Academy of Sciences for the present year, which shows that the nineteen awards mentioned carry with them money-prizes to the value of more than eighty-two thousand francs, or nearly seventeen thousand dollars. A considerable portion of this money goes to professors or instructors in universities or technical schools, who, it is reasonable to suppose, find it very welcome; and much of the rest goes to officials, civil, military or naval, in the public service, while the remainder is awarded to private investigators. We have all heard of Bernard Palissy, who spent everything that he had in the endeavor to solve the problem of making a particular kind of pottery, and only succeeded after he had sacrificed his wife's wedding-ring, the last object of material value that remained in possession of the family. The French have had many Bernard Palissys, who have given up all less noble aims to devote themselves to science, and they have been sensible enough to try to do something to show such people that they are not forgotten by those who will reap the benefit of their researches. The effect of this view of the matter is already apparent in the interest and fruitfulness of French scientific research, and it is probable that these will become more and more conspicuous in the future.

GENERAL RIVERA, Secretary of Agriculture for Cuba, has applied to General Wood for permission to take immediate measures for preserving the public forests of the island, which are very extensive. In Cuba, as in the United States, the public forests are ravaged by thieves, to call them by their right name, who steal the property of their fellow-citizens with impunity. As there is little railway transportation in Cuba, plundering is not carried on there as yet on the enormous scale on which it is practised here, but the Cuban timber is very valuable, much of it being mahogany or other slow-growing and precious timber, and it is none too soon to begin to take measures for protecting it.

THE fifteenth annual exhibition of the Architectural League of New York will open in the galleries of the American Fine-Arts Society, 215 West Fifty-seventh Street, February 10, continuing until March 3. The galleries will be open from 10 a. m. to 6 p. m., and from 8 to 10 p. m. every week day, and from noon to 6 p. m. on Sundays.

MR. EDGAR JAMES BANKS, formerly United States Consul at Bagdad, who has before made valuable suggestions in regard to archæological exploration in Western Asia, calls attention to the ruins of Mugheir, in the desert bordering the Persian Gulf, which is supposed to be identical with the ancient city called in the Bible "Ur of the Chaldees," in which Abraham and Sarah were born, educated and married, and from which, with their nephew, Lot, they emigrated, at the Divine command, to the land of Canaan. Some excavations which have already been made at Mugheir have brought to light ornaments of gold, silver and copper, precious stones, pottery and inscribed tablets, some of which indicate that the original accounts of the creation and the deluge are still preserved there. Even in Abraham's time Ur was an ancient city, and much that is found there will probably belong to a period long anterior to the earliest civilization of Egypt. Thanks to the plastic clay of the Euphrates Valley, the ancient inhabitants of the country between the Indian Ocean and the Caucasus were much disposed to make records on pieces of terra-cotta, and multitudes of these have come down to us. In a single subterranean chamber in this region forty thousand such inscribed cylinders or cones were found, and the ruins of Mugheir are altogether likely to furnish vast numbers of them, which should throw light on that most interesting of subjects, the life and manners of the people who inhabited the world before the historical epoch.

A PECULIAR determination is said to have been reached by "organized labor" in the city of Springfield, Massachusetts. By a rule recently adopted, no member of a union is to be permitted, after March 15 next, to occupy a house built by non-union labor, or to do any work in repairing such a house. The rule is to go very gradually into effect, for it is not to apply to houses already built, but only to those constructed after the date fixed. The inventors of this ridiculous scheme imagine that, by means of it, builders of houses will be compelled to employ union labor, "thereby forcing hundreds of men to join the unions." It does not seem to have occurred to them that the owners of union-built houses, finding that the power of organized labor is to be exercised to provide them with tenants, will fix their rents to suit the demand, and that the non-union man, besides saving the heavy union dues, and being allowed to work when and where he likes, and at such wages as he is worth, will be able to hire a better house for the same money than his union neighbor, who is compelled, under threat of the misery which the union tyrants can inflict on himself and his family, to live in any sort of dwelling that the landlord favored by "organized labor" may see fit to provide him with, and on terms fixed, not by wholesome competition, but by monopoly. If this consideration, added to the others which thoughtful workmen understand, serves to "force hundreds of men to join the unions," human nature in Springfield must be singularly organized.

NOTES ON SOME EUROPEAN SYSTEMS OF FOREST ADMINISTRATION. — I.

RECENT residence, of some years' duration, and rather extended wanderings in the Alps of France, Switzerland, Bavaria and Austria, have afforded me opportunities to learn something of the methods and results of forest-administration in those regions. A constant interest in the subject beginning in some earlier experience at home, and a realization of the vital importance of the question to ourselves, urged me, with the kindly encouragement of the *American Architect*, to set down these notes of a layman's observation for publication in this review, in the hope that something of interest may be found in them, some addition, perhaps, to the knowledge of existing precedents to which we may be inclined to turn for guidance. Through the courtesy of forestry officials in the countries named, and of our own diplomatic and consular representatives, I have been able to obtain copies of legislative documents on the organization, history, etc., of the several systems, regulations and instructions for officers of the service, tabulated statistics, and such-like material, for which I wish to acknowledge here, in grateful remembrance of many kindnesses, my indebtedness. I shall endeavor to use of this information only so much as may be applicable to a consideration of the present state of our own forest-lands and the question of saving them from the destruction which imminently threatens.

In studying these examples of what other countries have done to save their forests from extinction we will find them dealing with conditions analogous to those of the problem we have to solve, a problem, it is needless to say, of the highest social consequence, involving as it does the future of the land and of the people who live upon the land — the problem of how to devise a means consonant with the scheme and traditions of our society to save our beautiful and bountiful country, an inheritance held in trust for our posterity, from the waste of short-sighted and comparatively unrestrained individual greed. Whatever we may ultimately do in the matter is likely to differ from European methods most radically in the particular of State interposition and Federal interference.

The Republic of France has in late years been much concerned with the proper attitude of the State in dealing with matters of individual initiative. A very general desire has been manifested to have the State represented in the direction of all great enterprises whose functions are of a broadly public character, and whose results are likely to be of social importance. More especially has this tendency been marked in the solution of the problems of reforestation. The recent drastic legislation which places the French government in a relation of absolute authority to the private owners of forest-lands, and of denuded lands designed for reforestation, is a going back to first principles which utterly abandons that most sacred dogma of the revolutionary political philosophy, the inalienable rights of individual ownership.

The increase in the area of waste lands in consequence of unchecked exploitation of the forests had begun to depopulate a large extent of territory. The mountain-lands of France were being converted into desert regions. To enable the government to come to the rescue, to render effective the intervention of the State for the redemption of large areas of territory and the economic relief of their communities, legislation of a far-reaching character was devised, and laws were passed which expanded the authority of the State and extended governmental functions to a degree never before reached under a republican system.

Under these laws the right of governmental expropriation has been exercised with an absolutism to which our own people would scarcely become reconciled.

These altered conditions are too recent, and the policy adopted under them is still of too tentative a character to show definite results, but the need of immediate action, and of a new system, had become so apparent that the communes are remaining patient under an exercise of State authority which is, from a republican point-of-view, somewhat extraordinary. The sister republic of Switzerland, suffering under a similar state of things, is following suit in a series of legislations, which we shall glance at later, based upon the same broad principle of State intervention in affairs of such interest to the whole nation as that of preserving the remaining forests, restoring so far as possible those destroyed, and repairing the incalculable damages wrought by such destruction. These two republican countries find no menance to the rights of man in the new régime, and welcome the State's aid of certain populations suffering under conditions brought about largely by their own ignorance and improvidence — conditions affecting the national prosperity by laying waste certain of the most beautiful portions of the nation's territory and driving off the inhabitants, pastoral peoples who find themselves unable to maintain life where the extinction of the forests has destroyed the pastures and created torrents to ravage the cultivated lands.

National prestige and the exigencies of defense demanded the intervention by government to correct a state of things which destroyed the beauty and habitability of their mountain frontiers. In the case of France, and largely also of Switzerland, the question of forest administration now resolves itself into one of reforestation. In the case of Bavaria, we shall be able to study the workings of a permanent forestry system, of some centuries' standing, which has afforded adequate protection to the natural and essential tree-covering of the mountainous parts of the kingdom.

The forests of France have been suffering ruinous exploitation since some time before the opening of the nineteenth century. From time to time French economists have warned the country of the inevitable consequences. Blanqui, in 1847, predicted that in 50 years the alpine frontiers of France and Italy would be desert wastes. While this dismal prognostication has, fortunately, not been quite verified, we shall see that the matter had become sufficiently grave to call for heroic treatment. Until 1860 practically nothing of importance was done to check the well-recognized evil.

Ignorance and greed had ruled, as they rule with regard to our own forests to-day, and will always rule in any society which leaves them unchecked. The Cevennes and the Pyrenees were little better off than the Alps, and floods incident upon the disappearance of the forests have played fearful havoc in those Departments; but the evil being of more recent standing in those regions, the effects, which are terribly cumulative — as we are to experience in our own case — are less sadly obvious.

The Alps are very steep and have a climate of comparative dryness, especially on their southern slopes, which does not give the vegetation such strength as elsewhere. Where the mantle of forest has escaped destruction towards the summits one finds the glades and clearings of the middle terrace still affording abundant pasturage. The roots of grass and herbage, nourished and protected by the tree-belt above, hold the soil in place.

Where this protection has been destroyed, the rills from the melting snow of the peaks, no longer held in check by a living tree-growth whose roots wattle the light calcareous soil in place upon the rocks and holds the streamlets within bounds, grow year by year into torrents. The trees once down, the moss, needles, shrubs and general woodland ground-covering, which takes up and distributes the surface-water like a sponge, are no longer sheltered and shaded, and die out rapidly. The waters of the storm and the melting snows from the crests rush unchecked down the mountain's flank. The little stream is swollen so that it ploughs out of its old bed, runs over the neighboring soil-covering and tears away the shallow blanket of earth down to the underlying rock, washing down masses of detritus to be deposited upon the meadow-lands below. The tilled ground at the mountain's foot is smothered in sand. Above on the shoulders, under the crest, bald rock slopes have succeeded the fresh green pastures.

"A country so ravaged becomes the image of desolation and of death," said M. Michel in his speech of 1880 to the Senate on the subject of the forests.

In the able and interesting brochure of M. Maxime Miane on the "*Reboisement des Montagnes*" will be found detailed descriptions of the evils following the loss of the forests. These notes will draw upon his work for facts and figures which admirably illustrate the subject.

M. Miane instances the case of the *Département* of the Basses-Alpes, where, out of a superficies of 695,000 hectares, there is a non-taxable area, waste lands and barren pastures, of 55 per cent, or over one-half, due to clear-cutting of the upper forest-belts. The residue contains 23 per cent of woods more or less destroyed and degraded mountain-pasturage, to only 22 per cent of cultivable land. He gives another example, the Valley of the Ubage (Barcelonnette), where the arid and waste lands are 41 per cent of the whole area, that is about 43,000 hectares of desert, from the same causes, while the beds of rivers and torrents have increased until they cover 1,761 hectares.

The report of a Commission on the agriculture of South-East France in 1866 gives the following gloomy picture of the ruin caused by the wholesale denudation of the Alps. "In passing through the mountainous parts of the Basses-Alpes one is struck with their imposing but sad and desolate appearance. In place of the rich forests and verdant pastures which once covered those mountains there remain only bald crags and arid slopes where a dwarf brush still holds the little vegetal soil, not yet scoured away by the waters, between the deep ravines in which the torrents have rolled down enormous avalanches of rocks and gravel. Here and there is a meadow, or a wooded slope, whose lesser declivity has spared it, an oasis in that great waste."

These evils had been allowed to continue for a long time. The communities had not attempted to check them. Naturally, the simple peasant of the mountains was incapable, singly or collectively, of devising any scheme broad enough to have effect against abuses of such wide range.

The peasant is apt to take things as he finds them without bothering his head to look for causes or remedies.

He only knows that his fathers lived here on the mountain-side, and pastured their great herds where he now finds scant browsing for a few goats. The forest was dense above his cabin in those days. Now it is gone, and he can see the great cliffs, which are continually bombarding him with falling rock-masses, or trying to overwhelm his hut with snowslides, and ever eating away his land with the torrents they send down from their glistening sides. Perhaps he remembers, or his grandfather tells him, that these fatal torrents have grown in a few generations from innocent little burns which tumbled down in the old days through the forest, and did no harm, but only brought down cool drink for the cattle and moisture for the meadows on their shoulders. He does not think of the slaughtering axe which has never been quiet among the trees for near a hundred years, nor of the thousands of sharp hoofs which have been cutting up the sod upon the pastures for all that time, leaving no season for rest and regrowth.

The wood was there. It was his. He cut and sold it, and was content in present well-being.

His own sheep fattened on the generous meadows, and there was room for more, so he let his pasturages and filled his pocket.

The present misery is only fate. It was to be.

He does not understand, nor is it easy to convince him, that his destruction of the forest which had stood there so long, useless as he thinks, even encumbering the land where he might be pasturing more herds, has left the streams free to plough the sides of his mountain, to kill out the old clearings where the grazing was so good, and to bury the fields below under tons of rubble, the soil scooped away from the meadowed-terraces of the old smiling slopes.

His fatalism is right in so far that the passive cause of all this ruin lay there always in the geologic character of his mountains, and in a climate which alternates terrible tempests with periods of burning drought. But it was the hand of man, the hand of his people and his own, laying low the brave old forest-guard which fought for them the sun and the storm, that let loose the demon of destruction upon the land of his birthright.

The finger falls readily upon regions upon the map of the United States where the same causes exist, the same evil is working, where nature is preparing a terrible vengeance for blind contempt of her laws. We are awakening to the danger, but slowly.

The air of the Alps is in certain parts dry, and rains are comparatively rare. The friable soil of calcareous earths and black lias-loam is not stable enough to hold the vegetation under the washings of heavy showers. The wattling of tree-roots held it in place while checking the scouring rush of the waters. Imprudent cutting, wholesale clearing, and the abuse of the privilege of removing litter, leaves, moss, acorns, etc., have destroyed the natural defences, and the elements work their will unchecked. The balance is lost.

France of to-day is paying the penalty of many centuries of indifferent forestry.

In mediæval times the great religious establishments did not spare the forests, while the secular clergy seldom discountenanced the vigorous cutting and clearing which swelled their tithes.

Venal foresters rathered favored abuses which brought them bribes.

Louis IX found it necessary to issue an edict forbidding them to accept gratuities. France at that time was covered with splendid forests.

Charles V had laws passed to forbid reckless clearings (1376).

Francis I multiplied edicts to this end, but civil and foreign wars prevented their successful enforcement.

Sully, in 1597, and Colbert, in 1669, strove to check the destruction of the forests.

After them came a period of neglect and waste. The Revolution knocked down all barriers. The nobles had owned the forests and protected them under royal edicts. This was pronounced tyrannical monopoly of the woods and chase. The wise old protective laws were abrogated as violations of the sovereign right of property, and of "the imprescriptible prerogatives of individual liberty."

The proclamation of November, 1791, placing the forests under the guardianship of the communes, was thus inspired.

"It delivered the forests," says M. Cezanne, "to their worst enemies."

The profound general misery of this period, the dense ignorance of the mountain-people, and their childish ardor for the new régime, gave over the ancient forests to wholesale looting.

The like was never seen — except perhaps in the subsequent history of a young people across the water, destined in the ensuing hundred years to grow into a very great nation, but also destined to continue for all that long time in an incredible unwisdom and improvidence with regard to its mighty forests.

Greed let loose made havoc in the grand old preserves of France. The citizen-peasant was his own master now, and he delighted to taste his liberty in laying low the silent nobles of the forests when not engaged in the keener sport of bagging aristocratic live-game. He would sometimes be known to fell a century-old tree to make him a pair of sabots.

After a while he found that to burn the standing forest was the quickest method of clearing. Firing a forest became a popular way of celebrating Revolutionary victories.

We have seen something of the same sort in our own land and time. I have never forgotten an incident, about the equal of the affair of the sabots, which came within my own ken some years ago in the Sierras. It was an everyday occurrence there, perhaps, and then, but it made a lasting impression upon a young tenderfoot. It was the case of a man who had cut down a round half-dozen forest giants in search of a butt "just right" to split up into shakes for his cabin. They told me he was rather proud of his "shakes." The great trees were left to rot where they fell.

I watched through three months of the same summer — it was in the late seventies — the great virgin forests burning down the ridges of the north fork of the Yuba, a matter connected, I understood, with sluice-mining operations on a grand scale along that stream.

The great hydraulic mines of that region were subsequently enjoined, it will be remembered, from washing down sand and gravel which covered the farms of the upper Sacramento, in a famous decision of the Supreme Court of California, which recognized the sovereignty of the soil, and voiced a principle which might, it would seem, warrant governmental protection of the forests in most of our States, granting that conservation of the forests is an agricultural necessity.

I once sailed up Lake Huron through three degrees of latitude, bisecting an area of 20,000 square miles covered with a dense pall of smoke from forest-fires on the American shore. But one might go on indefinitely citing such cases of incalculable waste and ruin.

It was not long before the plundering of the forests throughout all France aroused the Revolutionary government to action.

It began to be feared that timber for the navies would be lacking. A decree of the 9 Floréal, year XI, prohibited all clear-cutting without express authorization. This prohibition ran for 25 years, and was renewed up to the year 1858, when it became definitive.

Michel estimates the area of forest destroyed under the Revolution at 1,500,000 hectares. The Alps bore the brunt of it.

A. B. Bibb.

[To be continued.]

THE WINTER EXHIBITIONS AT BURLINGTON HOUSE AND THE NEW GALLERY.— I.

THE winter exhibitions just opened at the Royal Academy and at the New Gallery promise to be of exceptional interest; indeed, for admirers of the Old Masters, there is a *embarras de richesses*.

At the New Gallery there are three distinct series, each complete in itself, viz.: a collection of Netherlandish Masters of extraordinary interest, among which are the names of Quentin Matsys, Mabuse, Hans Memlinc, Snyders; an important gathering of canvases by Sir Peter Paul Rubens and his school, also a small selection of works by such distinguished British painters as Reynolds, Raeburn, Gainsborough, Hoppner, Turner and Lawrence.

At Burlington House Sir Anthony Van Dyck reigns alone, six galleries being devoted to one hundred and twenty-nine oil-paintings, while the water-color room contains above one hundred sketches for larger works, and many portraits in *grisaille* of artists, engravers, scientists, etched by Van Dyck himself, and others reproduced by the best engravers of the day, to form the celebrated book known as the "*Centum Icones*." This exhibition is interesting not only as being a collection of the works of a most distinguished artist but as consisting chiefly of portraits of King Charles I, his family and Court.

Before proceeding to describe the works here shown, it may be interesting to run through the principal stages of Van Dyck's career, our knowledge of which remains very imperfect, in spite of several "*Lives*" of the painter which have been given to the world. He scarcely ever signed or dated his pictures, as Rembrandt did; he kept no diaries, as did Sir Joshua Reynolds and Romney; and we are left to learn our facts concerning him from doubtful traditions and chance records. We know, however, that he was born at Antwerp on March 22, 1599, in the same year as Velasquez and eight years before Rembrandt, that his parents were in a good position, and that in 1610, at the age of ten, he took his place as an apprentice in the studio of Hendrick van Balen, who was considered one of the first artists of the day, two years later becoming a pupil of Rubens, with whom he worked for six years. There are many stories of his precocity, and before he was twenty he had made a great name.

Van Dyck's first visit to England was paid about 1620, and King James I gave him £100 "by way of reward for special service performed for his Majestie." What that service was is unknown, but it is believed that on occasions he acted as secret envoy for James I, his passport describing the painter as "servant" to the king, which in a hostile land, as Holland then was, guaranteed his safety, he being a Belgian.

His stay in England was, however, very short, and early in 1621 he returned to Antwerp and resumed his connection with Rubens, assisting him probably in the great work of decorating the Church of the Jesuits. The end of this year saw him on his way to Italy, to which course Rubens urged him, and he stayed there four years, during which time he painted the portraits of many distinguished personages. While in Genoa he frequently visited Sofonisba Aguiscola, a noble lady of Cremona, and a famous portrait-painter. This lady had been invited by order of Philip II to Madrid, where, among other sitters she had the beautiful Elizabeth of Valois, Philip's newly-married third wife, and Don Carlos, his ill-fated son. In later life she lost her sight, and Van Dyck was wont to say that he "had been more enlightened in painting by a blind woman than by his own master"— no mean praise from Rubens's favorite pupil.

Some years were spent in Belgium, interspersed with sundry visits to Paris and Germany, and in 1632 Van Dyck arrived in London at the pressing invitation of his patron, the Earl of Arundel. He was at once appointed "Principal Painter in Ordinary to Their Majesties," some months later receiving the honor of knighthood, and from that time onward his career was one of unexampled success.

The amazing number of portraits painted by him can only be accounted for by the fact that the details, etc., of drapery were executed by his pupils from his own small sketches. As a rule he devoted one hour at a time to each sitter, rising at the end of the hour as a token that the sitting had terminated. On occasion, however, he invited his sitters to a lordly banquet, where he had the opportunity to study them at their ease.

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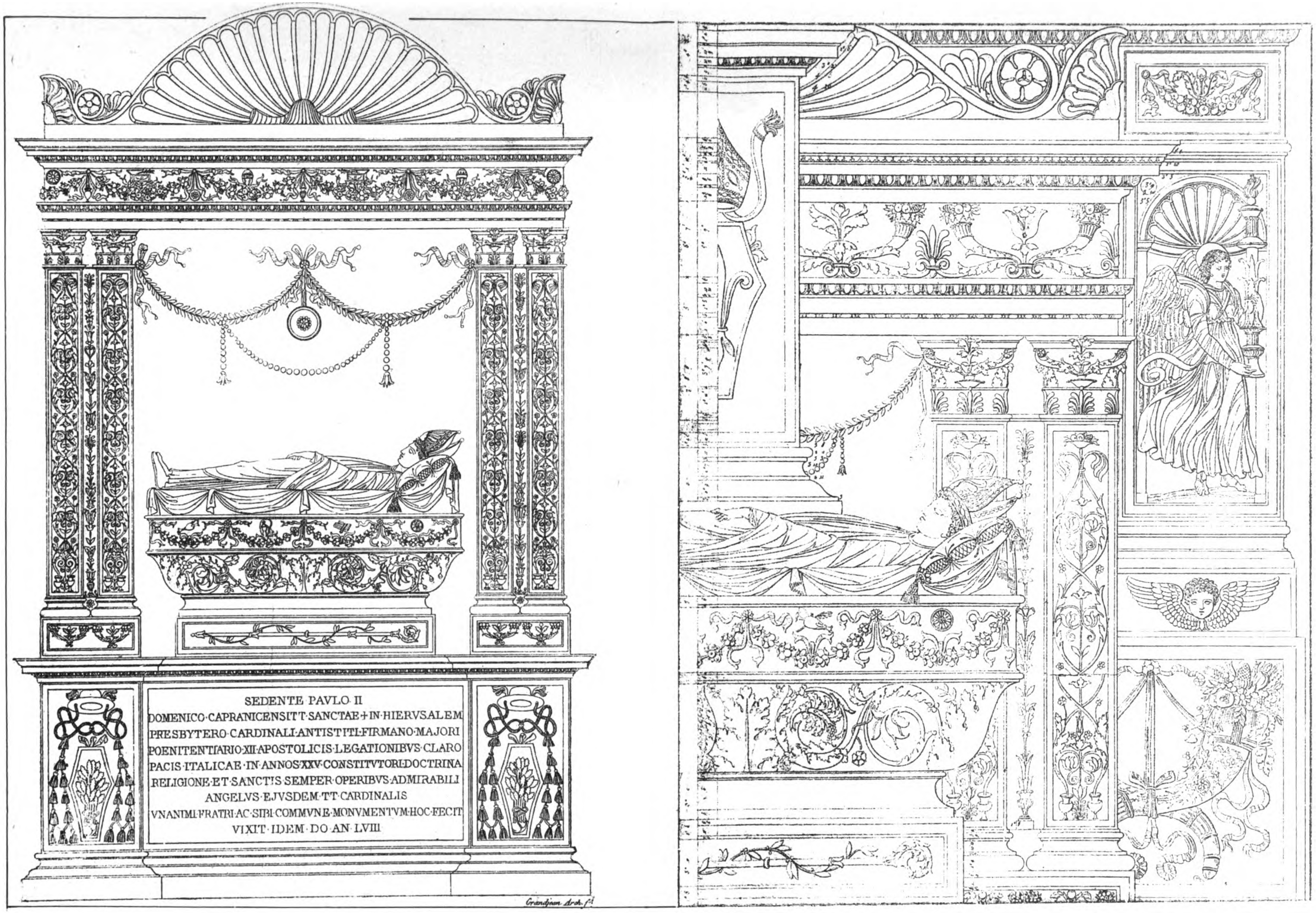
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TOMB OF CARDINAL CAPRANICA, IN THE CHURCH OF STA. MARIA SOPRA, MINERVA, ROME.

AMERICAN ARCHITECT AND BUILDING NEWS, FEB. 3, 1900. No. 1258.

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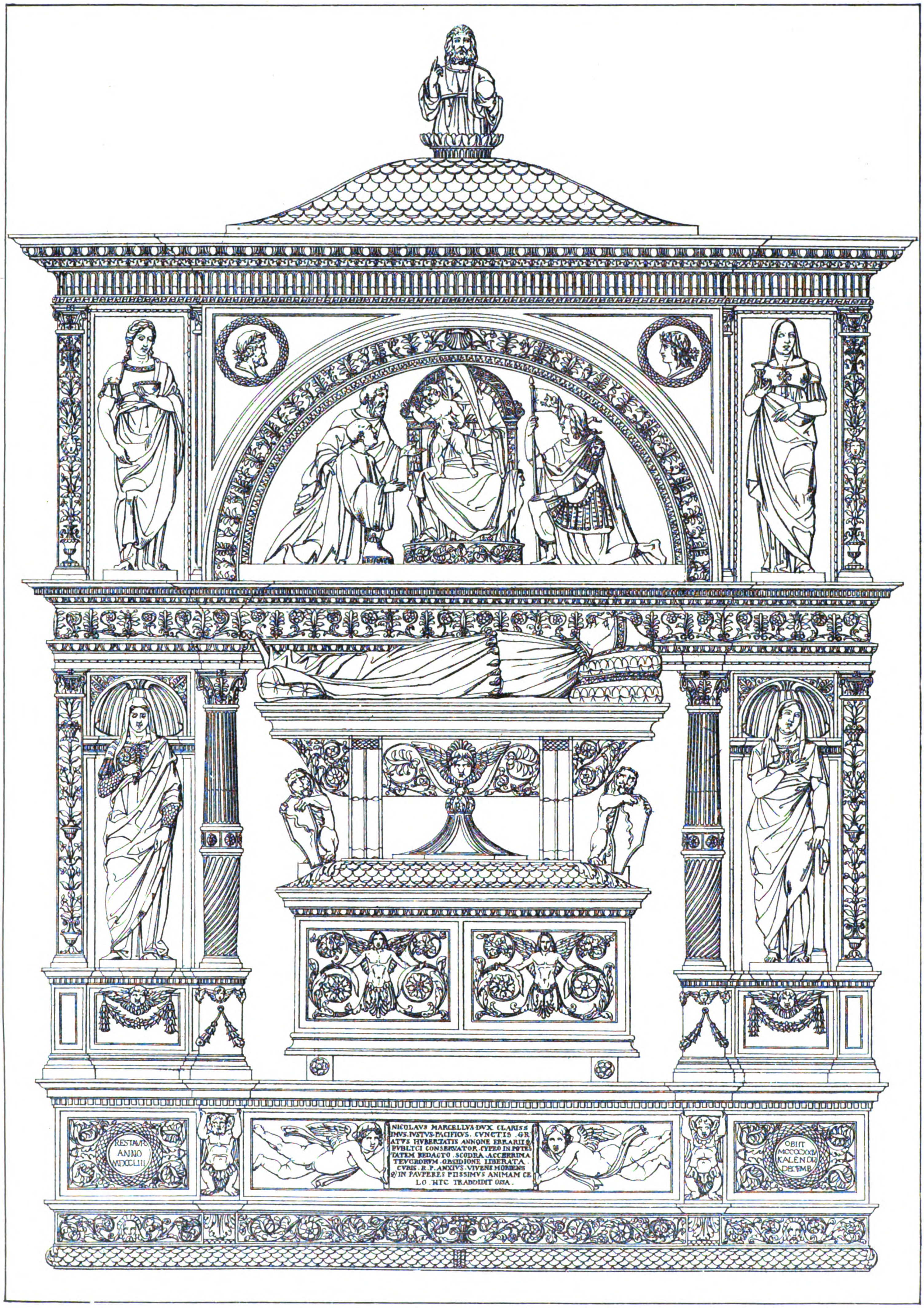
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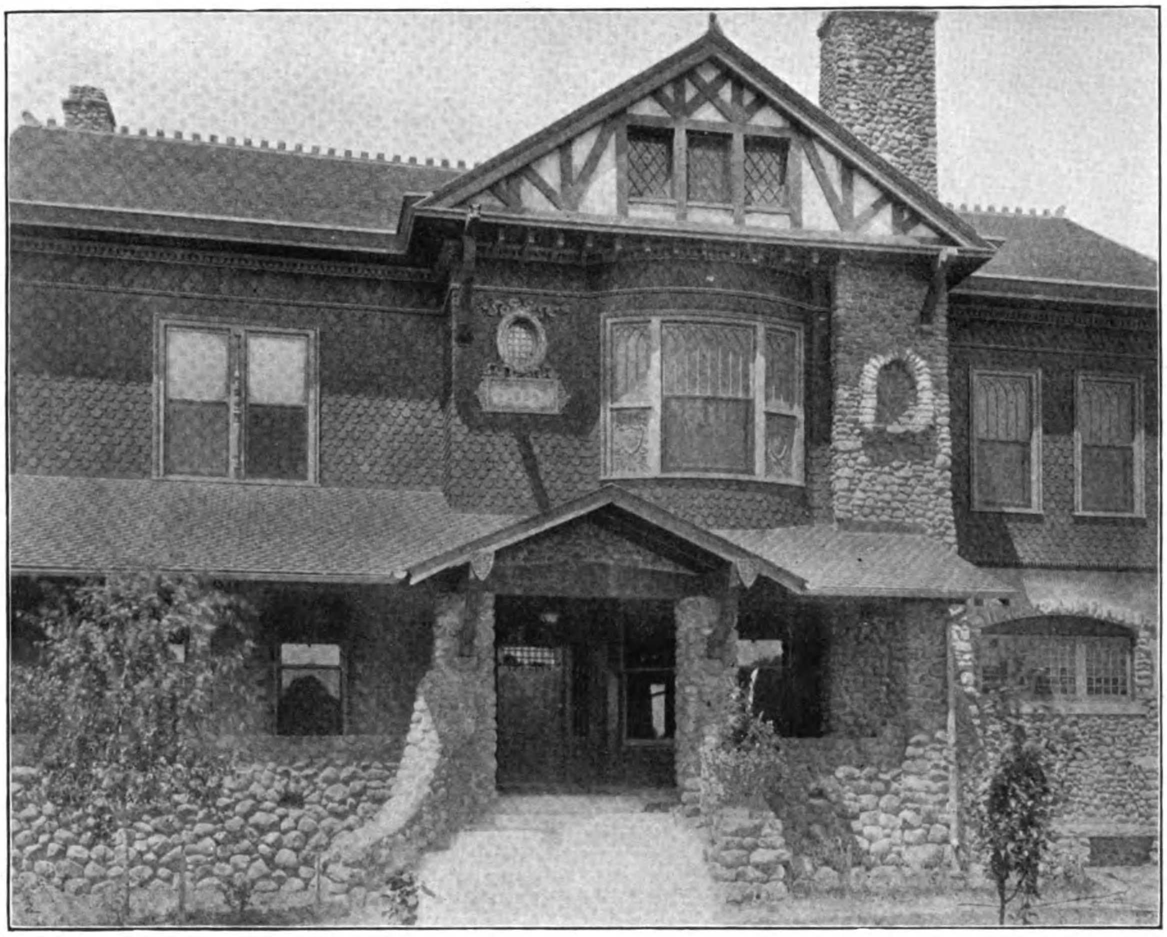

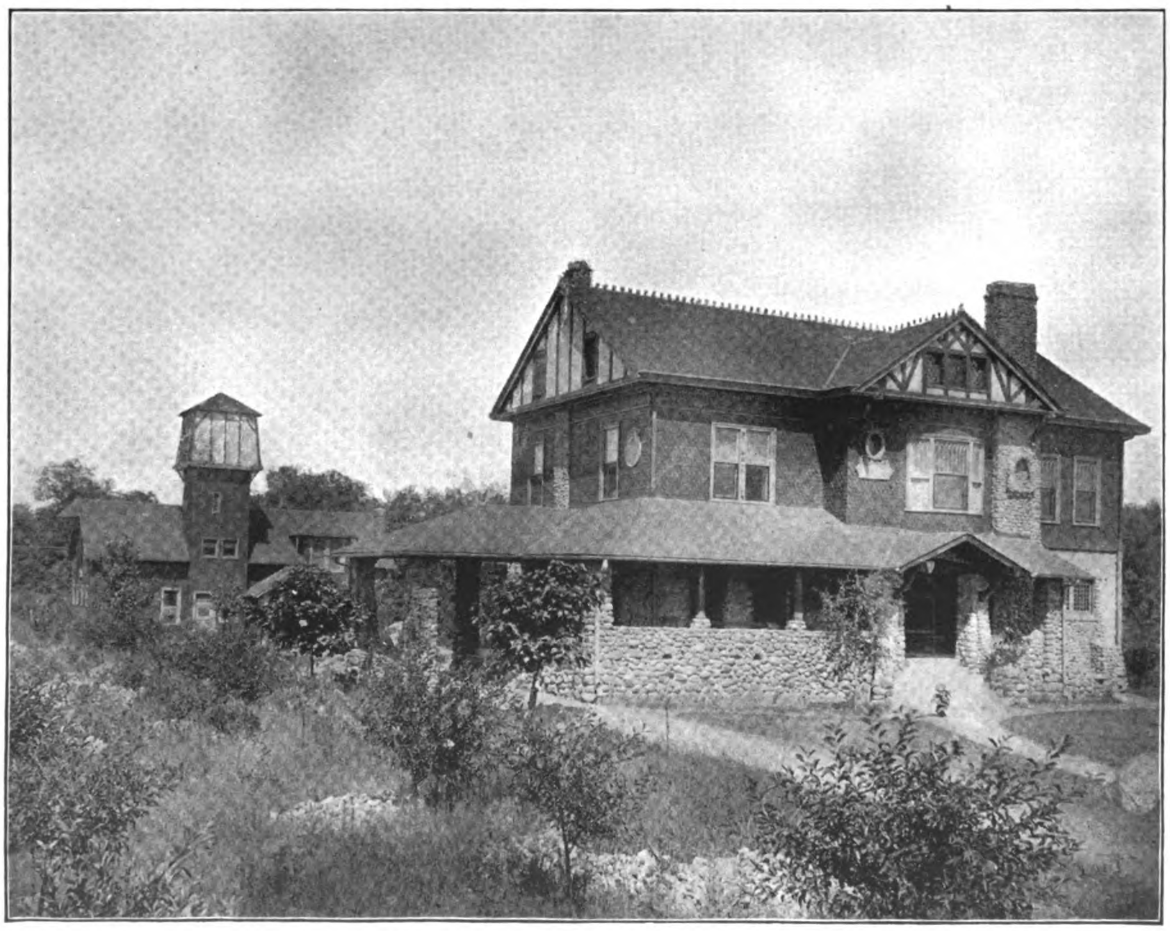

House of Frank Flanner, Esq., Indianapolis, Ind.

VONNEGUT & BOHN, ARCHITECTS.

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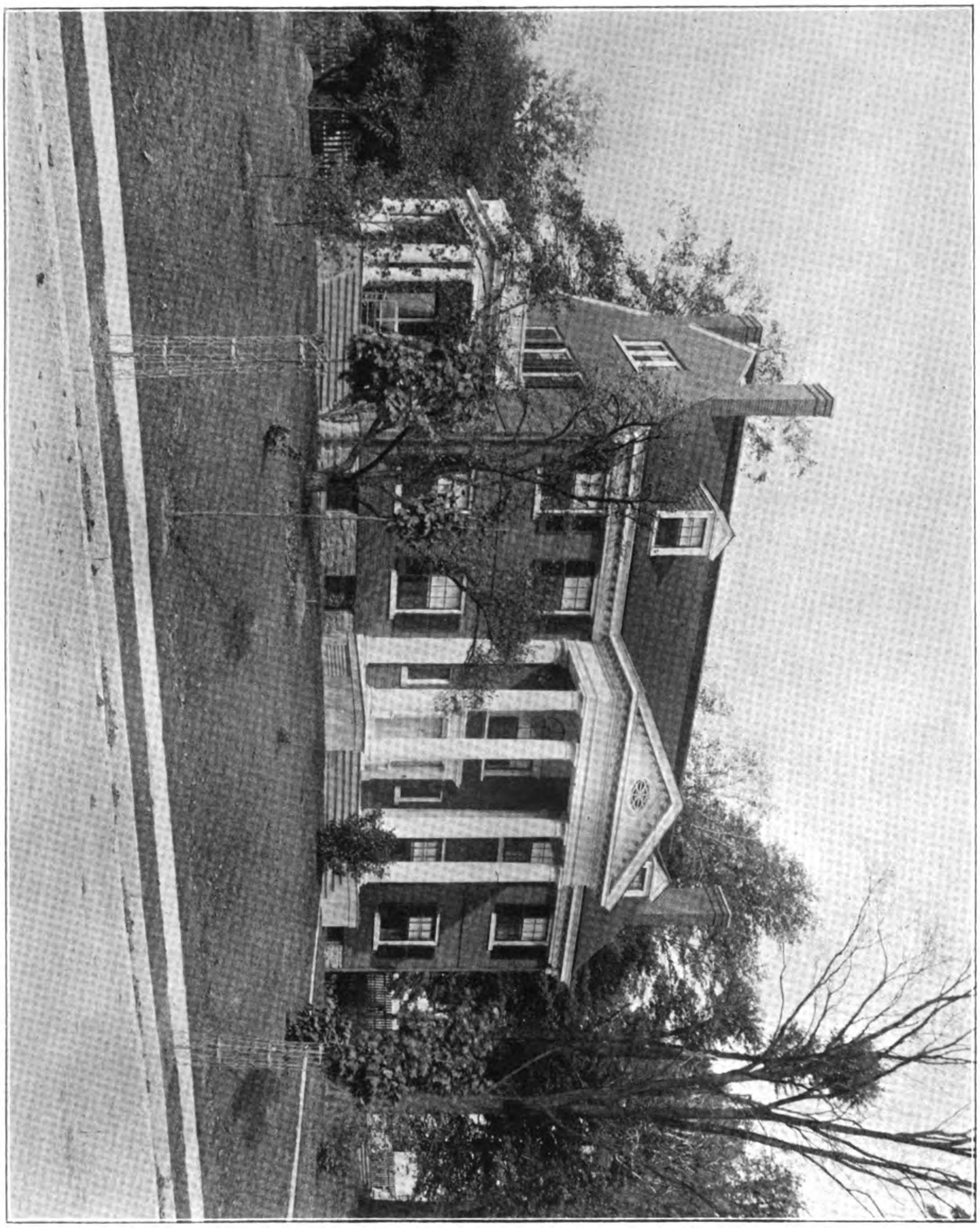
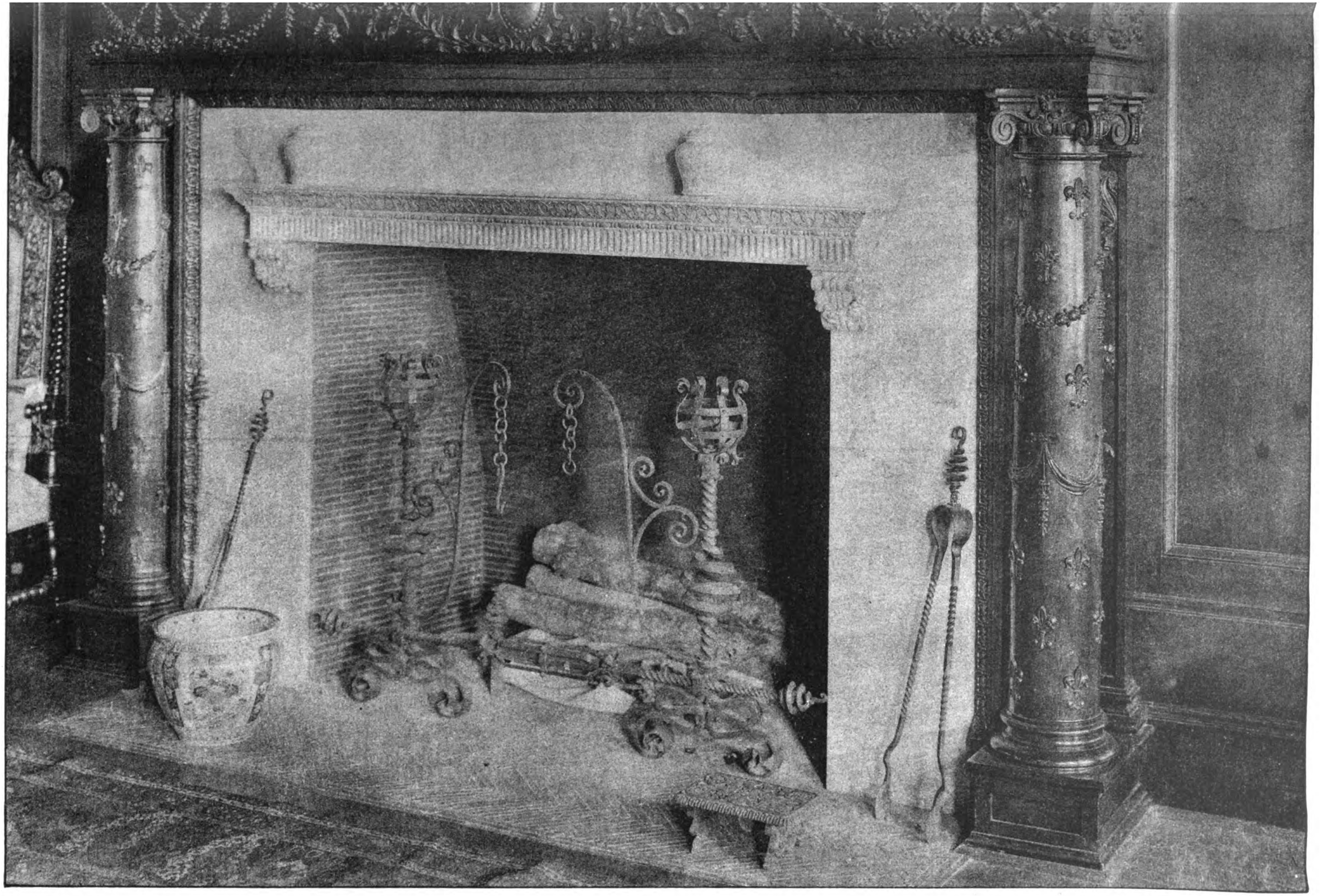


House of Larz Anderson, Esq., Cincinnati, O.
Elzner & Anderson, Architects



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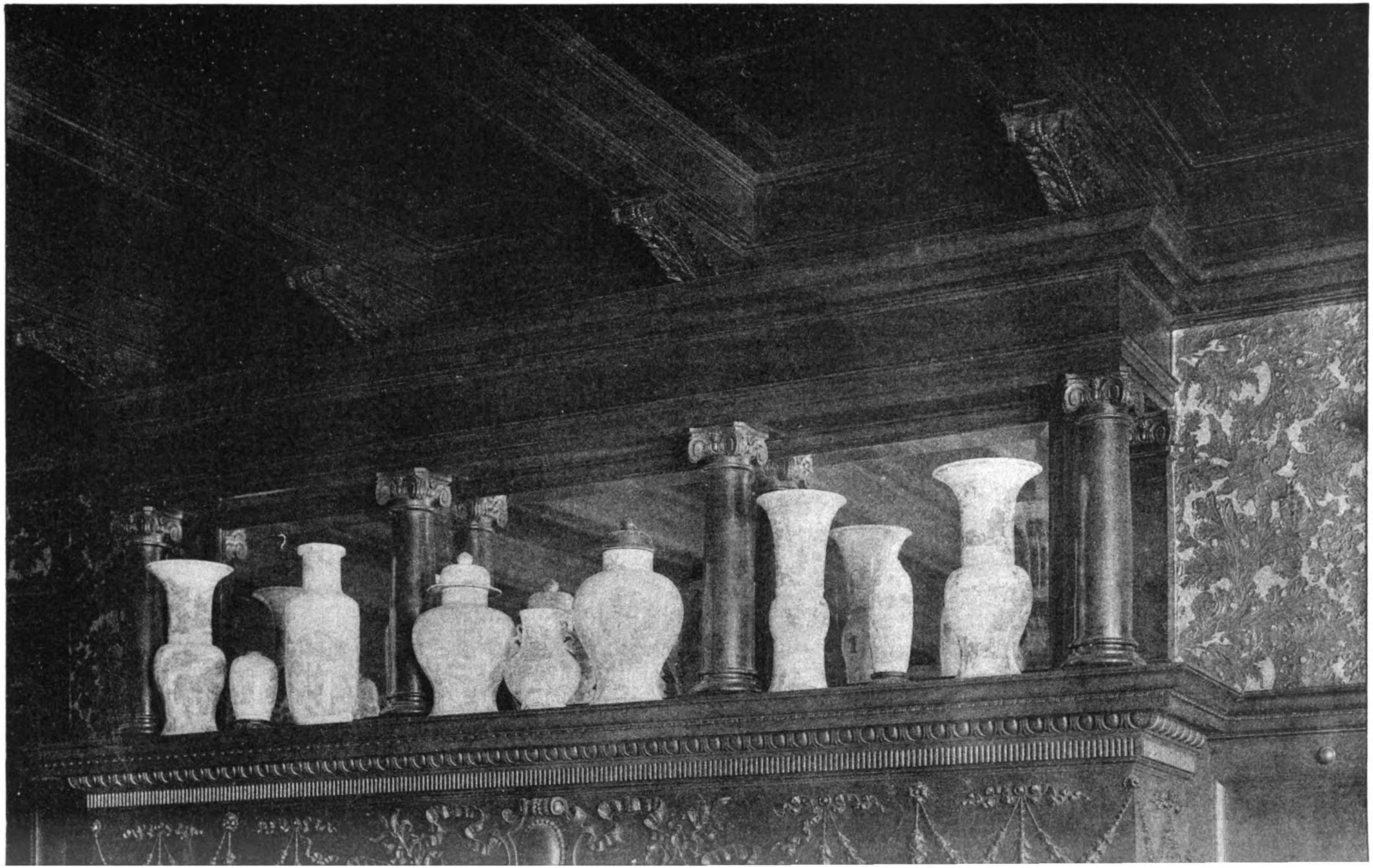

The refinement and artistic splendor of the Court of Madrid at the beginning of the reign of Philip IV undoubtedly exerted a great influence on Charles when, as Prince of Wales, he visited Spain, accompanied by Buckingham. And though unsuccessful in his quest of a bride, he acquired or greatly increased those tastes which adorned his few prosperous years as a king, and which still lend a grace to his memory. The galleries of the Escurial and the Prado fired his ambition to form one in England worthy of the British Crown,— the only ideal which Charles was fortunate enough to attain.

Velasquez, who had shortly before come to reside at the Court of Madrid, began the portrait of Charles, receiving from him one hundred crowns; but it was left to Van Dyck to be the unrivalled delineator of that pensive countenance.

It is undoubtedly to Van Dyck's visit to Italy that we must ascribe his preëminence as a painter. His mode of conception enabled him to seize the more refined delicacy of the upper classes without at the same time failing to mark with life and spirit the characteristic traits of the lower. As has been well said, "he seems to have come into the world to paint for all time the gallants, the courtiers and the heroes of the Stuart Cause. He found in the work of his predecessors poetry at its highest, brutality at its broadest; then he took up his brush, and, with the best of good painting, recorded the best of good breeding."

In his native country and all over the continent of Europe he is regarded first as the continuator of Rubens, and next as the inventor of a type of aristocratic grace and dignity which has been the world's ideal ever since. To us in England he is this and more, by reason of the political history of those ten years during which he worked among us. He has preserved for us the features and the lavish elegance of a whole generation — a whole social epoch which was swept away at Naseby and Marston Moor. In the judgment of the ordinary cultivated man admiring the art of painting and knowing something of history this is a sufficient claim to immortality.

The present exhibition contains fewer examples of his religious pictures than did the recent exhibition of this painter's works at Antwerp. It is, on the other hand, an *almost* exhaustive representation of his art as a portrait-painter. We have said "almost," since the absence of the treasures at Panshanger, and the still more celebrated pictures at Petworth, the property of Lord Leconfield (among which are many *chefs d'œuvre*), have left a blank in the collection.

On the other hand we may congratulate the Academy on having received from the Emperor Nicholas II the loan of the "Lord Wharton" from the magnificent galleries of the "Hermitage," St. Petersburg.

Her Majesty the Queen, with her usual kindness, has lent six paintings from Windsor Castle and Buckingham Palace, besides a drawing in chalk of the horse in the large equestrian portrait of Charles I, lent by Lord Barrington. The King of Italy sends several small chalk drawings from the Royal Library.

Truly a gorgeous display meets the eye, culminating in Gallery III, where the centre of each of the four walls is occupied by a masterpiece, viz.: the Queen's "Five Children of Charles I," the Emperor's "Philip, Lord Wharton," each hung with drapery, the Duke of Newcastle's "Rinaldo and Armida," and "Andrea Spinola," lent by Captain Heywood-Lonsdale. In this, the largest gallery, only twenty-eight paintings are hung, so that full justice can be done to these splendid works, and no less splendid and noteworthy frames.

Among the seven pictures lent by the Queen it is strange that there are none of Charles I or his queen, Henrietta Maria, not even the famous three portrait-heads in different positions painted as a model for Bernini's bust. But there are two groups of their children, one of the three eldest, and a second of their five children; in the centre of this latter portrait-group is an immense mastiff, which, though finely realized, somewhat breaks up the composition. The Princess Mary, in white satin, looks around at the spectator with a demurely coquettish air, and is altogether charming. This canvas, 64 x 78 inches, is signed and dated 1637, and is also inscribed with the names and ages of the children in Latin. Van Dyck's familiarity with the Royal Family gave him a great facility in catching the childish grace by which these pictures of the children are distinguished.

Viscount Galway lends also a "Portrait of Charles I and his Family," the queen seated with the infant Princess Mary in her arms, and at the knee of the king stands the little Prince Charles. The queen wears a dress of amber silk, with white lace and pearl necklace; the Houses of Parliament form a background seen through a window.

To a future article must be left a more detailed description of this interesting collection, the present paper being naturally confined more particularly to a general sketch of the man and his style.

[To be continued.]

STRENGTH OF CONCRETE SLABS.

A JOINT committee of representatives of the Northern Architectural Association, the Newcastle, Gateshead and Tyne District Master Builders' Association, and the Council of the Building Trades Exchange, was appointed last March to organize and carry out an independent test of the comparative breaking strengths of concrete slabs made with and without the addition of "expanded metal." The details were left in the hands of a sub-committee, under whose personal direction and supervision twelve slabs were set up on wood centerings and brick piers in the foundry yard of the Gallowgate Iron Works, belonging to Henry Walker & Sons, Limited, on July 20 and 24 last, the centerings being removed on Aug. 16. The slabs, which were calculated within a fraction of the cost per yard either way, were cast in wooden boxes supported by brick piers, and the concrete was mixed according to the specification of the sub-committee as follows: "Concrete to be gauged 5 to 1 for the five-inch slabs and 3 to 1 for the three-inch, and the cement to be of the ordinary gauge of 2,500 meshes to the square inch. The concrete for the five-inch slabs to be composed of four parts clean-washed gravel to pass a two-inch gauge, one part of clean sand, and one of Portland cement. The concrete for the three-inch slabs to be composed of two parts clean-washed gravel to one-inch gauge, one of clean sand and one of Portland cement."

The cement was procured from a merchant in the ordinary way, and when tested there was *no* residue through the fifty-sieve, and only two per cent. through the seventy-sieve. It, however, only weighed ninety-four pounds per striked bushel.

The five-inch slabs at 5 to 1 with metal were Nos. 2, 5 and 8, and those without the metal Nos. 1, 3 and 4, being eight inches thick, the extra three inches being necessary to equal the value of the metal (No. 10 gauge). The three-inch slabs at 3 to 1 with No. 8 metal were Nos. 9, 10 and 11, and those without the metal were increased to four and one-half inches thick, to equal the value of the metal omitted, and were Nos. 6, 7 and 12. Each slab had six-inch wall-hold, each end only supported. The corresponding slabs, with and without metal, were made out of the same gauging of concrete. All were four feet wide.

In the presence of several members of the committee and a number of other gentlemen, the slabs were gradually weighted with pig-iron on Sept. 19 and 20 last, and in their report the committee state the results to have been as follows: —

Slab No. 1 broke before the test began, two men and six pigs of cast-iron being on it — *i. e.*, about 9 cwt. No. 2 broke under a load of 237 cwt. 3 qrs. 14 lbs., showing one-eighth-inch deflection under 75 cwt.; one-half-inch deflection under 175 cwt.; it cracked at 220 cwt. No. 3 broke under a load of 22 cwt. 2 qrs. 18 lbs. No. 5 was unbroken under a load of 340 cwt. 1 qr. 21 lbs, though it showed five-sixteenths-inch deflection; it was unsafe to pile the pig-iron to a greater height. When the load was taken off, the slab went back to nearly its original straightness. No. 4 broke under a load of 124 cwt. 2 qrs. 20 lbs. No. 8 was unbroken at 270 cwt. 2 qrs. 2 lbs., at which point the piling of pig-iron was considered unsafe, being about eleven feet high. The slab showed a slight deflection under a load of 261 cwt. 2 qrs. 12 lbs., but went back again.

It should be mentioned that the slabs, when cast, remained exposed in the open to a continuous hot sun, which had "spiders-webbed" the surface of the cement. No. 4 slab was partly protected from the sun.

Slab No. 6 broke accidentally while the men were piling up the weight on No. 5. No. 10 broke under 96 cwt. 1 qr. 17 lbs. No. 7 broke under 17 cwt. 1 qr. 25 lbs. No. 11 broke under 113 cwt. 0 qrs. 22 lbs. No. 12 broke under 10 cwt. 3 qrs. 10 lbs. No. 9 broke under 213 cwt. 3 qrs. 8 lbs.

Generally speaking, there was only slight deflection before breaking. The fracture of the expanded metal was clean and free from crystalline appearance, the strands of steel having come closer together under the load, the "diamonds" being considerably elongated.— *The Builders' Journal and Architectural Record.*

ECONOMY OF SLAG-MORTAR.

THOSE who have set out and superintended extensive and important works of construction without being in any manner responsible for the designs, working-drawings and specifications accompanying them, cannot fail to have noticed the lavish and frequently indiscriminate use of Portland-cement, mortar and concrete. It frequently almost appears that when the architect and engineer have to deal with the constantly-recurring, difficult problem of getting in foundations in bad, boggy ground, in wet, spongy soil, and often at considerable depths completely under water, their only idea is to "shove-in" the cement-concrete with reckless prodigality, regardless alike of quantity, quality and cost. This extravagance — it might almost be termed waste — is unquestionably due in a great measure to the fact that the professional man knows that he is perfectly safe in trusting implicitly to so valuable and reliable constructive-materials as Portland-cements, concrete and mortar. Both these materials are very often employed under conditions and in situations in which there is not the slightest necessity or excuse for adopting them, and where ordinary good lime could be substituted for the cement with perfect security, and with a very considerable diminution in the total cost of the work. Another source of pecuniary loss is the very large proportion or "dose" of cement composing the mixtures, which is in many instances greatly in excess of that required for strength, setting or stability. Indeed, it is not going too far to state that some professional men have almost abandoned the use of ordinary lime for building purposes.

That artificial Portland-cement is a good, a very good, cement is universally admitted; but it is a serious mistake to take for granted, as many do, that it is the only good cement, and that no other good specimens exist except those produced, as that is, by the intimate combination of clay and carbonate of lime or chalk. The excellent quality of artificial Portland-cement and the valuable constructive properties it possesses are unfortunately accompanied by the grave drawback that, if it is one of the best, it is also one of the most expensive of building-materials. This high cost-price is again much enhanced by the circumstance that it is most frequently and most profitably employed in very large quantities,— that is, *en bloc*. As a matter-of-fact, in all engineering work of magnitude, such as docks, bridges, water and sewerage works, and military defences and fortifications, the item of Portland-cement figures as a formidable part of the total expense. It was during the execution of the project, at present in progress, for increasing the water-supply of the city of Brussels, where Portland-cement was used in vast quantities, that the question of its comparatively excessive cost was brought prominently forward, and experiments conducted with the view of instituting a fair trial of the relative merits of ordinary Portland-cement and of another mixture in which the cement was replaced by slag or dross. The results of the experiments are both sufficiently conclusive and important to warrant us placing a brief description of them before our readers.

In the first place, the conditions of test were identical for all the specimens, whether they related to the tensile and compressive strength, the degree of crushing or trituration, the action of boiling-water or the force of steam. It was impossible to adopt a uniform standard of density, because while that of ordinary cement averages about 3.12, it is only 2 75 for the mortar prepared with slag. It was stipulated that the test-samples of pure cement should develop a strength of at least 330 lbs. per square inch after being exposed to the air for one day, and then immersed in water for a week, and that when this latter period was increased to some twenty-five days, the strength should be augmented to 480 lbs. It was conclusively proved that this condition was both worthless and out of date, without taking into consideration that cement is seldom used in a pure state, but, on the contrary, mixed with a certain proportion of sand, which imparts to it the necessary strength. Ordinary cement-mortar generally consists of one part of cement and three of sand, both by weight, and this was the composition of the specimens submitted to trial. At the end of 28 days these specimens were capable of supporting a stress of compression equal to 1,060 lbs. per square inch. When it is considered that nearly 30,000 tons of slag-cement were employed in the new water-works of Brussels for every purpose and under every condition for which it was suitable, and that it fulfilled in a perfectly successful manner all the duties demanded of it, it is evident that the material possesses considerable claims to public notice and investigation. Among the advantages belonging to the slag-cement when compared with the Portland are, first, that it is a good deal cheaper, since it costs ten shillings less per ton; secondly, it can be used almost immediately after its manufacture without the necessity of storing it for some three or four months; and, thirdly, it is lighter, so that it yields a greater volume, weight for weight. The whole of the slag-cement for the new water-supply works mentioned was procured from the factory of M. M. Heeren; but the same product is prepared by the firm of John Cockerill, at Seraing, which, upon trial, has afforded equally excellent results as that from the other well-known establishment. It has been stated on the best authority that over £12,000 was saved by the substitution of slag-cement for Portland in the works at Brussels.— *T. C., in Building News.*

THE ROYAL NATIONAL GALLERIES ILLUSTRATED.

Consul General Mason, of Berlin, has made a report giving a description of an association organized in Berlin some years ago for the purpose of applying a new process of colored photogravure to the reproduction of the masterpieces in the royal galleries of Europe. The educational character of the work, Mr. Mason thinks, makes it worthy of notice. The report reads as follows:

It will doubtless interest the friends of æsthetic culture in America to know that a society in Berlin, known as the Vereinigung der Künstfreunde für die amtlichen Publicationen der Königlichen National Gallerie (Union of Friends of Art for the Official Publication of the Royal National Galleries), which is organized under a charter issued by the Prussian Ministry of Worship and Education, is about to send a delegate to our country for the purpose of establishing a branch office in the United States. As its name implies, the society is the vehicle for distributing among the educational and religious institutions of Germany and the people in general facsimile copies in colors of the great masterpieces and famous paintings in the royal galleries in Europe, thus planting the seeds of art education in the minds of the rising generation, and fostering among the intelligent classes a cultivated taste for wholesome art.

The popularity which the society enjoys here and the success which has crowned its efforts must be accredited to the artistic standard of its productions, which rise far above the meaningless black and white prints, cheap chromos, photogravures, etc., that flood the German art market. This superiority is due, in the main, to the peculiar process owned and employed by the society in its reproductions, a process which, in due course, it intends to transplant to the United States. It differs in its method from any heretofore employed, inasmuch as it enables the reproducing artists not only to create true facsimiles of the original in every outline, by means of photography and steel etching, but also to produce the depth of coloring and the peculiarities of manner of each master by a specia employment of the colors called heliotint, thus reproducing the characteristic handiwork of the artists.

The methods employed by the society for the distribution of its productions among the educational and religious institutions of the country and the people at large are unique.

It obtained at the start a list of patrons, who, in consideration of certain annual contributions, caused the society to distribute a number of the works among the educational institutions of the country. This list of patrons gradually grew, headed by the Emperor and Empress of Germany, who are followed by many of the members of other royal and princely families in Europe, until it has reached an aggregate membership of more than sixteen thousand.

These patrons gradually introduced the society's productions into the homes of subaltern officers, teachers, civic employés, and people in the humbler walks of life, who, however, before becoming entitled to the privilege of receiving such art reproductions, had to sign the society's roll of membership and thus become active agents in the missionary work.

Keeping its educational tendencies continually in mind, the society has always exercised the greatest care in the choice of subjects for reproduction. It has made selections from the great classical and modern religious painters, Raphael, Murillo, Guido Reni, Paolo Veronese being among the former, and Hoffmann, Plockhorst, Gerhardt, and others, among the latter. It has also endeavored to foster the love of home and country by giving reproductions from famous masters which represent scenes from history, and it will adhere to a like policy in the conduct of its American branch. Each year, a number of subjects from the history of the United States, these subjects to be chosen by an American Advisory Board, will be selected for reproduction, the originals to be painted by American artists. (Leutze's famous canvas, "Washington Crossing the Delaware," is already on the stocks in the society's ateliers, to open the American series.) These American historical paintings will be placed on exhibition, both in the United States and in Europe, and gold medals will be awarded by the society to those American artists whose works are chosen for reproduction. American landscapes and marine views will also be included in this line, and it is proposed, in time, to erect a suitable building in one of the principal cities of the Union, which is to serve the purposes of an artistic workshop for the American branch of the society.

THE LAY OF THE JERRY-BUILDER, WITH APOLOGIES TO THE OLD, OLD SONG.

Woodman, slay that tree,
  Leave not a single bough,
In age it worries me,
  Down with it, down with it now.
A stupid rustic's hand
  Once planted it for shade;
Go, man, don't let it stand,
  I want a villa made.

That old disgusting tree,
  Whose branches tumble down
To strike and frighten me,
  Oh! go and hack it down.
Give one good thund'ring stroke,
  Cut all its earth-bound ties,
And pull that hideous oak
  Down, crashing, from the skies.

When but an idle boy,
  I sought its dismal shade,
And laughed with gushing joy,
  Or with my sisters played.
My mother chid me there,
  My father whacked my hand;
I ask, and with no tear
  Don't let that old oak stand!

The midges round it cling,
  The gnats with fury bite,
The birds upon the wing,
  Go shrieking day and night,
Old tree! it's time you fled,
  I want a villa bright,
A villa painted red,
  And not *quite* watertight.

S. Beale.

ILLUSTRATIONS

[*Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.*]

LIBRARY MANTELPIECE: HOUSE OF ADDISON CAMMACK, ESQ., TUXEDO PARK, N. Y. MR. BRUCE PRICE, ARCHITECT, NEW YORK, N. Y.

TOMB OF THE DOGE NICOLO MARCELLO, IN SS. GIOVANNI E PAOLO, VENICE, ITALY.

THIS plate is copied from Cicognara's *"Le Fabbriche e i Monumenti conspicui di Venezia."*

TOMB OF CARDINAL CAPRANICA, IN STA. MARIA SOPRA MINERVA, ROME, ITALY.

THIS plate is copied from Grandjean de Montigny's *"Architecture Toscane."*

HOUSE OF FRANK FLANNER, ESQ., INDIANAPOLIS, IND. MESSRS. VONNEGUT & BOHN, ARCHITECTS, INDIANAPOLIS, IND.

HOUSE FOR LARZ ANDERSON, ESQ., CINCINNATI, O. MESSRS. ELZNER & ANDERSON, ARCHITECTS, CINCINNATI, O.

[The following named illustration may be found by reference to our advertising pages.]

PRINCIPAL MIHRÀB [THE NICHE MARKING THE DIRECTION OF MECCA] OF THE JÂMI MASJID, FATEHPUR SIKRI, INDIA.

OWING to an incident in the chapter of accidents, this plate, which should have accompanied the description published in our last issue, was displaced in favor of certain views of the Pan-American Exhibition buildings at Buffalo.

[Additional Illustrations in the International Edition.]

HOUSE OF ADDISON CAMMACK, ESQ., TUXEDO PARK, N. Y. MR. BRUCE PRICE, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print.]

THE CARNEGIE LIBRARY, PITTSBURGH, PA. MESSRS. LONGFELLOW, ALDEN & HARLOW, ARCHITECTS, BOSTON, MASS.

[Gelatine Print.]

HOUSE OF HERR EMANUEL SCROL, MUNICH, BAVARIA. HERR EMANUEL SEIDL, ARCHITECT.

[Gelatine Print.]

THE GARDEN FRONT: "BRYANSTON," DORSET, ENG. MR. R. NORMAN SHAW, ARCHITECT.

PERSPECTIVE VIEW OF THE SAME FRONT.

NOTES AND CLIPPINGS

THE ITALIAN TAX ON WORKS OF ART.—The question of the Pacca Edict (a law demanding that a duty of 20 per cent shall be paid on all objects of art exported from the Papal States) is interesting when viewed from an international standpoint. While making no comment, I will simply limit myself to facts with regard to the recent action of the Italian Government in this matter, which will, I think, create a certain amount of surprise. The Diplomatic Corps at the Court of the King of Italy have frequently protested against the application of the 10-per-cent tax established by Article 14 of the Pacca Edict, April 7, 1820, on objects of art exported by the representatives of foreign States. They sustain their right of exemption from this tax by virtue of the exemptions established in their favor in the preliminary dispositions of the customs tariffs. The members of the Diplomatic Corps opined that payment for the right to export objects of art should be included under the head of customs dues, from which ambassadors and other foreign ministers are exempt, not only with regard to goods they re-export, but also those which they have acquired during the term of their mission. The present Ministry have replied, however, that a distinction must be made between the customs tariff of one per cent paid by exporters of objects of art at the frontier of the Italian provinces and the tax of 20 per cent imposed by the Pacca Edict in the ex-Pontifical Provinces, which tax admits of no exception. The controversy which has been going on since 1885 has resulted in the question being taken up by the Minister of Foreign Affairs, who has, in turn, placed the matter before the Council of State. The decision of this Council at the sitting of January 1, 1899, was as follows: "That the tax of 20 per cent imposed by Article 14 of the Pacca Edict, April 7, 1820, shall be levied on all the goods therein indicated upon leaving the State, though they may belong to the members of the Diplomatic Corps." Another cause of lively protest is the tax fixed upon objects of modern art of 2.50 lire (2*s.*) on goods valued at 2687.50 lire (£107 10*s.*) and under; and of 12.50 lire (10*s.*) if the value exceeds that amount. This tax was imposed in the ex-Pontifical Provinces by Pius IX in his notification dated August 16, 1848. The Minister of Foreign Affairs, in order to put an end to the dispute, had recourse a second time to the Council of State, enquiring if the maintenance of this latter tax be legitimate in view of the present condition of artistic legislation. The Council of State, however, at the sitting of February 16, 1899, was of the opinion "that the tax imposed on objects of art exported from the provinces forming part of the ex-Pontifical States, in accordance with the notification of August 16, 1848, has not been abolished, and, consequently, must still remain in force." This decision concerns also the tax on ancient objects prescribed by the same notification, of 12.50 lire (10*s.*) if the value exceeds 268.79 lire (£10 15*s.*), and 2.70 lire (2*s.* 2*d.*) if the value falls below that amount.—*Alfredo Melani in the Builders' Journal.*

WIRE-NAILS.—In estimating the cost of work it is necessary that the approximate amount of nails required to complete the work should be known. Since the introduction of the wire-nail the number of nails required to do a given piece of work is not the same as when the barbarous "cut-nail" was in vogue, therefore the rules given for the latter will not apply to the former. The table given herewith is nearly correct, and is based on experience. For 1,000 laths it takes 5¾ pounds wire-lath nails; 1,000 shingles, 5 inches to weather, 5 pounds shingle-nails; 1,000 feet 6-inch sidings, 18 pounds 2½-inch wire-nails; 1,000 feet common boarding, 20 pounds 2¾-inch wire-nails; 1,000 feet rough boarding, 22 pounds 3-inch wire-nails; 1,000 feet square-edge 1-inch flooring, 36 pounds 3-inch wire-nails; 1,000 feet square-edge 2-inch flooring, 40 pounds 4-inch wire-nails; 1,000 feet matched flooring, blind-nailed, 31 pounds 3-inch wire-nails; 1,000 feet furring, 1″ x 3″, 42 pounds 3 inch wire-nails; 1,000 feet furring, 1″ x 2″, 60 pounds 3 inch wire-nails; 1,000 feet pine finish, 26 pounds 2½-inch wire-nails; 1,000 feet hardwood finish, 20 pounds 2¼-inch wire-nails; 1,000 feet studding in walls, 10 pounds 3 inch wire-nails; 1,000 feet rafters, cellar-beams, 8 pounds 3-inch wire-nails; 1,000 feet common fencing, 12 pounds 3-inch wire-nails; 1,000 feet pantry fittings, shelves, hooks, strips, and similar work, about 5 pounds 2-inch wire-nails. These figures are very nearly correct, sufficiently so to answer the purpose of the estimator. Of course, if the sizes of the nails are changed—larger or smaller—the figure must be changed to suit.—*The Carpenter and Builder.*

THE "HOUSE OF DOOM," WASHINGTON.—Commodore Rodgers a generation ago brought to Washington from Spain four Andalusian jackasses—no ordinary animals, be it understood, but jackasses of high degree and purest lineage. At that time such beasts were greatly wanted for breeding purposes in this country, and the long-eared quartet excited a vast deal of admiration. Henry Clay saw them, and, being himself interested in the rearing of fine stock, was most anxious to possess one—so much so, indeed, that he offered as a "swap" a large lot of land near the corner of Pennsylvania Avenue and Madison Place, valued to-day at about sixty thousand dollars. The Commodore accepted, and Mr. Clay, having thus acquired title to one of the jackasses, immediately proceeded to lose it over a gaming-table. This did not end the matter, however, for Mr. Clay afterward redeemed the jackass and sent it to Kentucky, where it became the progenitor of what is now the most remarkable strain of mules in the United States. As for the lot, Commodore Rodgers built on it a dwelling which in later years obtained the uncheerful designation of the "House of Doom" because of the series of tragedies and misfortunes connected with it. But of that more anon. Speaking of Henry Clay's loss of the Andalusian jackass at the gaming-table reminds one of the remarks of Mrs. Clay when somebody asked her if her husband's gambling habits did not cause her deep pain. She laughed as she replied: "Not at all, I assure you. He nearly always wins." As already stated, Commodore Rodgers built a house on the land which he received from Mr. Clay in exchange for the jackass. It was a large and imposing mansion of brick, and its history from start to finish was made up of a series of tragic occurrences. The commodore died in it soon after its completion, and then it was turned into a fashionable boarding-house, which failed, swamping the finances of the proprietress. Next it became the home of the Washington Club, which included in its membership Barton Key and Daniel E. Sickles. It is said that Key signalled to Mrs. Sickles with a handkerchief from a window of the club; but, anyhow, it was directly in front of the club-house that Sickles shot Key to death, and the latter was carried into the club in a dying condition. When the Civil War broke out, the club went to smash, and Secretary Seward leased the mansion for his residence. It was there that Seward and his son, with three other people, were butchered nearly to death by the assassin Payne. Undeterred by its tragic history, James G. Blaine bought the "House of Doom" in 1890, and from that time on he had nothing but misfortune. He lost a daughter, and his son, Walker Blaine, died in the house. Finally, he himself died there, and then the mansion was torn down, to be replaced by a theatre, which now occupies the site once swapped for a jackass of Andalusia.—*Rene Bache in the Boston Transcript.*

A LETTER RUSKIN DISOWNED.—At Chesterfield, in England, on the occasion of a distribution of prizes to art-classes in that town, a letter was read to the assemblage as the reply of John Ruskin to an invitation to be present at the meeting. It said:—

"I have just returned from Venice, where I have been ruminating in the pasturages of the home of art, the loveliest and holiest of lovely and holy cities, where the very stones cry out eloquent in the elegancies of iambics. I could not if I would go to Chesterfield, and I much doubt whether I would go if I could. I have heard of Chesterfield. Hath it not a steeple abomination, and is it not the home, if not the cradle, of that arch abomination, Creator Stephenson? To him we are indebted for the screeching and howling and shrieking fiends fit only for a pandemonium called locomotives, which disfigure the loveliest spots of God's own land. My good young people, this is preëminently the foolishest, yes, quite the foolishest, notion that you can get into your empty little eggshells of heads, that you can be a Titian or a Raphael or a Phidias, or that you can write like Seneca; but because you cannot be great, there is no reason why you should not aspire to greatness. In joy, humility, and humbleness work together. Only don't study art because it will pay, and do not ask for payment because you study art. Wisdom is more precious than rubies, and is offered to you as a blessing in herself. She is the reward of industry, kindness, and modesty. She is the prize of prizes, the strength of your life now and an earnest of the life that is to come. This advice is better than money, and I give it to you gratis. Ponder it and profit by it.

Ever faithfully yours, John Ruskin."

It was a message of monition and instruction, not lacking confidence in tone, like others conveyed over its appended signature, and the classes received it in a proper spirit of humility. The next morning, however, the paper which had printed the report of the meeting was adorned with this briefer missive, bearing the same autograph, this time authentic: —

"*Sir,* — The letter you quote in your last night's issue as having been sent by me to the Secretary of the Art School at Chesterfield is an impudent hoax from begining to end, and you will oblige me by letting this be known as soon as possible. I am, Sir, your faithful servant,

John Ruskin." — *N. Y. Times.*

A real Ruskin Letter. — Perhaps Ruskin's blunt honesty of expression is nowhere better illustrated than in a letter written in reply to an appeal for help to pay off the debt on a chapel at Richmond. We copy it from Collingwood's "*Life.*"

Brantwood, Coniston, Lancashire, May 19, 1886.

"*Sir,* — I am scornfully amused at your appeal to me, of all people in the world the precisely least likely to give you a farthing! My first word to all men and boys who care to hear me is, 'Don't get into debt. Starve and go to heaven, but don't borrow. Try first begging, — I don't mind, if it's really needful, stealing! But don't buy things you can't pay for!'

"And of all manner of debtors, pious people building churches they can't pay for are the most detestable nonsense to me. Can't you preach and pray behind the hedges — or in a sand-pit — or a coal-hole — first?

"And of all manner of churches thus idiotically built, iron churches are the damnablest to me.

"And of all the sects of believers in any ruling spirit — Hindoos, Turks, Feather Idolators, and Mumbo Jumbo, Log and Fire Worshippers, who want churches, your modern English Evangelical sect is the most absurd, and entirely objectionable and unendurable to me! All which they might very easily have found out from my books — any other sort of sect would! — before bothering me to write it to them.

Ever, nevertheless, and in all this saying,
Your faithful servant, John Ruskin."

It should be added that the recipient of the letter promptly sold it for ten pounds! — *Exchange.*

Reforming English Burial Customs. — A reform movement which has been under way in England for a number of years, endeavoring to foster the spirit of simplicity in matters relating to death, is the Church of England Burial, Funeral, and Mourning Reform Association. Its motto is, "No darkened house, no durable coffin, no special mourning attire, no bricked grave, no unnecessary show, no avoidable expense, and no unusual eating or drinking." In at least one of the above prohibitions, the English reformers have a precedent in the Roman Laws of the Twelve Tables. The first part of No. X forbids useless expense at funerals. An exception in No. XI, which would doubtless be agreeable to the Church Association, states that the gold settings of false teeth, or the gold with which they are bound, should be buried or burned with the deceased. — *N. Y. Evening Post.*

Creeping Rails on the Eads Bridge. — We quote the following from our contemporary *Locomotive Engineering:* "One of the 'fishiest' sounding stories we have run across lately is the creeping of rails on the Eads Bridge across the Mississippi, and yet, strange to say, it is borne out by facts and statements that cannot be disputed. Through the kindness of Mr. N. W. Eayrs, we are able to show the creeping points which are used to take care of this and not disturb traffic. This is so clear as to need practically no explanation, the rails from the bridge simply creeping off and past the points, which are securely fastened to the solid approaches at the ends. At the other or rear end (counting the direction of traffic) extra rails are fastened on, and are dragged through and into position by the creep of the rails. When a complete rail-length has been worked through they add another at the tail of the procession, and take off the one which has crept through. This one is transferred to the other track and immediately starts back. There are four of these devices on the bridge, one for each end of each track. These take up the motion of the track over the bridge, a distance of 1,700 feet. At the east end is a double crossover, which is also protected against creep by a pair of these devices, one on each track. East of this, again, is a stretch of about fifteen hundred feet of track on the east approach trestle, where one of these devices is put on each track. Rails placed in the creeping adjustment at the east end of the west-bound track go through the straight track around a 5-degree 45-minute curve, 340 feet long, and out again on a tangent, until taken out at the west end of this section of track. We endeavored to find the relation between the creeping of track and the amount of tonnage hauled over or the number of trains, to try and find some key to the peculiar performance, but have not been able to, as yet. The fact remains that the rails creep from 30 feet to 60 feet per month, or from 1 foot to 2 feet per day, so that a rail creeps across the bridge in from 28 to 56 days. It gives one a kind of 'creepy' feeling, but the facts stand, and explanations are in order."

Incandescent-lamp Test. — "A Life Test of Incandescent-lamps," was the title of a paper read by Prof. George D. Shepardson before the convention of the Northwestern Electrical Association held recently in Milwaukee, Wis., and published by the *Electrical World and Engineer.* An account was given of tests at the University of Minnesota on the candle-power and energy consumption of 16 candle-power incandescent-lamps selected from commercial stock. All the conditions of the test were made uniform for all the lamps Of fifty-five lamps finally tested, the initial candle-power varied from 14.1 to 23, and the watts from 2.32 to 4.10 per candle. The general average for the fifty-five lamps given a preliminary test was 18.3 candle-power and 3.1 watts per candle. The lamps were run on an alternating-current circuit whose voltage was maintained within a range of two volts. After burning about fifty hours it was found that the candle power varied from 8.2 to 23, and the watts from 2.32 to 4.10, the averages being 17.5 candle-power and 3 27 watts per candle. After 100 hours the candle-power varied from 10.1 to 23.2, and the watts 2.52 to 5.02 per candle; the averages were 17.5 candle-power at 3 3 watts per candle. After about four hundred hours the light varied from about 11.3 to 19, and the watts 3 to 4.31 per candle; the averages were 16 candle-power and 3.54 watts per candle. After 600 hours the light varied from 11.4 to 18 8 candle-power, and the watts from 3.24 to 4.26 per candle, the averages being 14.7 candle-power and 3.82 watts per candle. A few lamps were burning at 800 and 900 hours, after which time the lights varied from 10.8 to 16 4 candle-power, and the watts from 3 6 to 4.4. Early in the test it was noted that several of the lamps were burning "blue," and these had a short life. All the lamps of this lot burned out at 100 hours, and none of those in another lasted more than five hundred hours, only one of them lasting over three hundred and fifty hours. A test was made to get some comparison between the behavior of lamps on constant voltage-circuits and those on a circuit of poor regulation. Several lamps were placed on a circuit varying from 104 to 118 volts. The high-economy lamps died within about three hundred hours, though most of their mates on a well-regulated circuit were in fair condition at 800 hours. The lamps of low initial economy, taking from 3.5 to 4 watts per candle, withstood the extreme variation much better. The candle-power and efficiency of the lamps on the fluctuating circuit fell in 300 hours as much as that of the lamps on constant voltage-circuit in 800 hours. After the test noted had been ended, some of the lamps were placed on a photometer and the voltage raised until the candle-power equalled the initial value. Three lamps marked at 108 volts were raised to 111.4, 112.6, and 114.6, respectively, to restore them to initial candle-power. Another lamp marked for 110 volts which had burned 550 hours on a circuit with widely fluctuating voltage was raised to 120 volts before its candle-power equalled that of its youth. The efficiencies of this lamp at the higher voltage were from 1 to 8 per cent lower than the original efficiencies. This test, Professor Shepardson said, seemed to justify the practice of moving old lamps to places on the circuit having higher average voltage. — *N. Y. Evening Post.*

Eaton Hall. — People in London are now asking whether the new Duke of Westminster will follow the example of his two predecessors and rebuild Eaton, the Cheshire country seat of the Grosvenor family. Something like $15,000,000 has been spent in building at Eaton during the present century. The late Duke's grandfather, dissatisfied with the stately old red-brick mansion of the seventeenth century, formerly known as Eaton Hall, pulled it down and replaced it with a huge and excessively ornate pile, which was justly defined by Charles Greville as a monument of lavish outlay and of bad taste. The first thing that the late Duke did on succeeding to the title was to pull this gorgeous palace to pieces. On its site he has built one of the most beautiful palaces in Europe, designed by the famous architect, Waterhouse. It is known, however, that the young Duke considers it to be too ornate, and if he is imbued with the same building mania as his grandfather, it is quite likely that he may pull it down and erect still another palace in its stead. — *Marquise de Fontenoy in the Philadelphia Press.*

The "Lafayette" Statue. — Senator Allison, when asked whether he had received the "open letter" written by Charles H. Niehaus to the committee of which the Senator is a member, concerning the cost of the "Lafayette" statue to be erected in Paris, replied that he had read the letter. "I assumed that it was meant for criticism and not for response. An open letter does not call for a reply. But I do not understand that there is any request for additional compensation to that already fixed upon. If such a question should arise I suppose that the commission, which includes Archbishop Ireland, Judge Day, and Mr. Peck, besides myself, would have something to say, just as we were empowered to make the original contract. There has been no other communication that I have heard of," continued the Senator, "touching the making of this statue. If there is any difficulty about it I suppose that the commission will be made aware of it by a direct communication giving the facts. In the absence of such a communication I do not see that there is anything for me to say." — *N. Y. Times.*

The French Juryman's Wall-space. — The Philadelphia *Press* says that French artists are considerably agitated over the arrangements for the great exhibition. It appears that a jury of fifty-six members, appointed by the Minister of Fine-Arts, and made up chiefly of painters, decided that each artist on the jury shall be allowed the right of exhibiting eight pictures. Upon the announcement of this ruling a general protest went up, and in order that its motives might not be further misrepresented, the committee added that all painters who had served on a jury either at the Champ de Mars or the Champs Elysées shall be entitled to exhibit an equal number of canvasses. It is now called to the attention of the body that if each juryman takes — in the vulgar phrase — "all that is coming to him," — there will be 1,200 exhibits as a result of these decisions, while there has been allotted space for only 1,600 pictures in all. No wonder there is perturbation among those French artists who have never been so lucky as to be jurymen!

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IT will be remembered that a struggle took place some months ago between the owners of the new building known as Westminster Chambers, in Copley Square, in Boston, who wished to carry their building up to the limit fixed by the building-law, of one hundred and twenty-five feet above the street, and the owners or trustees of the Museum of Fine Arts, Trinity Church, the Public Library, and other important buildings in the neighborhood, who, for various reasons, did not wish to have a structure in the neighborhood so much higher than their own, and the public, a large portion of whom thought that the effect of the square, which is nearly surrounded by buildings of great architectural interest, would be injured by the intrusion of a lofty apartment-house. The contest ended in the passage, by the Legislature, of a special statute, providing that no building on the south side of Copley Square, on which the proposed apartment-house stands, should be carried to a height greater than ninety feet; but, as this special legislation, aimed at a single building, had a certain air of injustice, the statute also provided that the city of Boston should pay a suitable compensation to the owners of Westminster Chambers for the damage inflicted upon them through its operation. The statute further provided that church spires and "sculptured ornaments" might be carried above the ninety-foot limit, and the owners of Westminster Chambers took advantage of this provision to carry above this limit almost an entire story, profusely decorated on the outside with terra-cotta caryatides and other objects of the kind. The work was hardly completed before it had given occasion for a variety and complexity of legal disputes which seem likely to keep the Massachusetts courts busy for some time to come. The trustees of the Art Museum, who had the best reason for desiring to keep the building within its legal bounds, applied for an order to have the portion above the ninety-foot limit removed, as being in violation of the statute. This application was resisted by the owners of Westminster Chambers, on the ground that their upper story was a "sculptured ornament," within the meaning of the law, and this interesting controversy, although it has been once decided against the Westminster Chambers, has still to be heard in the court of final appeal. On the other side, the owners of Westminster Chambers, relying on the provision of the statute which required the payment of compensation to them for submitting to special restriction, sued the city for what they considered a reasonable sum, and were met with the plea that the statute fixing a special limit of height was unconstitutional and void, the part relating to the payment of damages as well as the rest. Meanwhile, as the Museum of Fine Arts is to be removed to the Fens, its trustees feel that they have no further interest in the matter, and have had themselves omitted from the court list of interested parties; while, in the Legislature itself, two bills are now pending, one of which repeals the present statute, while the other specifically approves the Westminster Chambers in its present condition; and last of all, the architect of Westminster Chambers threatens to bring suit against nearly every one concerned, for injury to his professional reputation by the arbitrary mangling of his design. So far, the owners of Westminster Chambers seem to be the principal sufferers. It is not unusual for hotel proprietors to reckon that a certain number of rooms, or floors, will pay their rent and running expenses, and that the remaining stories above can be counted upon for profit, and the enforced abandonment of these stories of profitable rooms, after all the plans had been made, the financial scheme prepared, and construction begun, might easily change such a building from a reasonably profitable investment into one which could never earn interest on the money put into it. Whether the Westminster Chambers is in this unfortunate condition we cannot say, and we sincerely hope that it is very far from it; but it is at least conceivable that a loss amounting to the greater part of the capital invested might easily be inflicted by such interference with a building scheme so far advanced as in this instance. Now, if the city's claim of the unconstitutionality of the limiting law is sustained, the owners of the building, who have suffered all the loss, will be obliged to look elsewhere for reimbursement, and it would not be easy to say whether any one can be compelled to make good their damage.

A CERTAIN artist, whose name we, on general principles, refrain from assisting to advertise gratuitously, recently created a sensation in New York by causing the arrest of the editor of an artistic journal on a charge of criminal libel, the charge being based, it is said, on an article which was at least no worse than a great deal of what passes for artistic criticism. Naturally, people who wish to carry out conscientiously the difficult and responsible duties of critics are rather alarmed at the quarrel, which, at best, will cause expense and annoyance to both sides, and the public at large is, or should be, deeply concerned in the matter. While we have no sympathy whatever with the sneering, clownish abuse which does duty in so many cases for artistic criticism, the greatest misfortune that could befall art, and American art in particular, would be to have any restraint put on the free and wholesome expression of opinion in regard to works of art offered for public appreciation. The worst influence that American art has suffered from has been the ridiculous laudation which ignorant journalists have poured out indiscriminately upon everything pretending to the name of art or artist. We remember a marine painter, who was accustomed to use laundry blueing to represent the ocean, because it was so much cheaper and handier than moist colors, whose works were extolled to the skies by the local newspapers; and even now, although a knowledge of art is far more widely diffused than it was a few years ago, the people who look upon the artistic development of the country as a movement of the deepest importance in the direction of humanity and morality, are continually shocked by the ignorant and mischievous adulation bestowed upon work which, even if good, does not deserve it, or, more rarely, by coarse ridicule of work which is seldom so bad as to merit it. The secret of good criticism is sympathy with the artist. Even if he is half spoiled by flattery, as so many American artists are, it is possible to call his attention to his shortcomings without jeering at him, and there must be little of the artist's heart in him if he would not really be grateful for such admonition; and where, as in most cases, there is something to praise, the feeling that the critic understands and appreciates his good points does more than anything else to reconcile an artist to condemnation of the bad part of his work, and to encourage him to correct it. In order, however, that this sort of criticism may be applied to works of art, the critic must be left as free as possible. While the idea that a hungry lawyer may be watching for an expression of disapproval on which to incite a libel-suit and earn a fee will make him afraid to call attention to faults, his own instinct will restrain him from distributing praises where he cannot also give just blame, and good art will suffer, to save bad art from deserved rebuke. In the present case, therefore, while a definite, malicious intent on the part of the critic, if proved, should be properly dealt with, nothing else ought, even under our very severe libel laws, to restrict the judgment of the persons whose business it is to direct the public taste in artistic matters. If their judgment is faulty, and their mode of expressing their opinions objectionable, it is for the public to punish them by refusing to read their criticisms, not for the courts to pursue them with penalties.

NEW YORK owes to a distinguished engineer, Mr. Alfred B. Boller, one of the best suggestions that has yet been made in regard to the placing of monuments. Lamenting, as every one must, the insignificant and unworthy situations of nearly all the monuments in New York, he proposes that, in the designing of the bridges and viaducts which are rapidly multiplying around the city, provision should be made for monumental ornaments. He calls attention to the new Alexander II bridge, in Paris, which, beautiful and impressive as it is, might have been made far more so if it had been possible to give it ampler space, and says, most truly, that the wide rivers, the distant views, and the general grandeur of scale of the scenery around New York lend themselves in an extraordinary degree to the production of imposing artistic effects. Most of our readers have probably many times been impressed with the quiet, almost melancholy, beauty of the High Bridge, whose very simplicity, combined with its landscape surroundings, make it one of the most charming objects that New York has to show; and it is easy to imagine how, for instance, the Grant Monument, in a very different form, might have been arranged in connection with this, or some more carefully designed viaduct, so as to retain the advantage of the landscape setting, and in connection with it to produce an effect unequalled by that of any other monument in the world. Of course, it would take consummate talent to design a monument which would harmonize with such a setting, but talent in such matters is now more easily found here than a favorable opportunity for its exercise; and if such sites can be arranged, there will be no difficulty in procuring designs worthy of them. Mr. Boller proposes that, before the sad mistake is committed of erecting the Dewey Arch in permanent form in the middle of a crowded street, under the shadow of a row of enormous hotels, an attempt shall be made to combine it with one of the many bridges and viaducts which are now contemplated in the upper part of the city, and in connection with which it would have a dignity which it could never have in Madison Square.

FOLLOWING the example set by Harvard University, the Massachusetts Institute of Technology has established a course in landscape gardening, or landscape architecture, as it seems to be fashionable to call it. Mr. Guy Lowell, who graduated in architecture from the Institute in 1894, and has since studied with distinction in the School of Fine Arts, in Paris, besides making a special study of landscape work in Europe, will give instruction in landscape design. The course is open to second-year students in architecture and civil engineering, and will include, besides the necessary theoretical branches and the practice of landscape design, work in horticulture at the Arnold Arboretum.

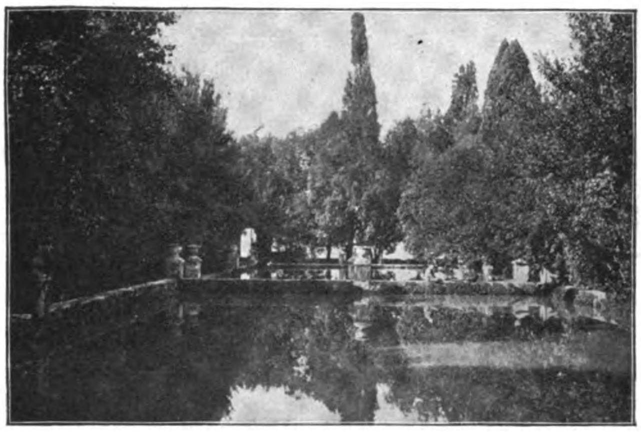
MILWAUKEE and St. Louis have been making some satisfactory experiments with portable school-houses. As used in Milwaukee, the buildings cost about seven hundred and fifty dollars apiece, and each will accommodate fifty-five children. They are made in sections, secured together with bolts, so that they can be taken down, removed, and set up anywhere on such foundation as may be available. Each has six windows, and the end wall is made into a blackboard. A stove furnishes all the heat required. Both Milwaukee and St. Louis have a rather shifting population, and these portable school-houses, which can be set up where they are needed, take the place very advantageously of the vacant dwellings and rooms which must otherwise be hired for schools. Taxpayers in cities will observe that these structures provide what seems to be suitable accommodation for the children at a cost of less than fourteen dollars per head, while the ordinary brick city school-house costs, as a rule, from one hundred and fifty to two hundred dollars per pupil, and is far more costly to maintain, and, usually, less satisfactory in lighting and ventilation than the simple one-story structures, with windows on each side. It would, of course, be unadvisable to abandon the system of providing large brick buildings for graded schools; but in the newer parts of large and growing cities, such portable structures could be extensively employed, with great advantage to the municipal treasury, as well as to the children, who are often obliged, in newly built quarters, to go for months and even years without proper school accommodation, while the slow processes of purchasing a site, securing an appropriation, and erecting a building, are going on.

M. PAUL SÉDILLE, one of the most noted of French architects, died recently, at the age of sixty-three. Paul Sédille was the son of a painter and architect of distinction, Jules Sédille, but was trained in his profession by M. Guénepin. He distinguished himself in the School of Fine-Arts, and, after his graduation, was appointed architect to the national manufactory at Sèvres. He soon gained an extensive practice, mainly in the way of private houses, both in city and country; but after the burning of the great department-store "Au Printemps," he was commissioned to replace it with a new building, and carried out his task with great success, the "Printemps" being one of the most beautiful constructions in Paris. Besides this building, he designed the church built to the memory of Jeanne d' Arc, at Domrémy, the Schneider Monument, at Le Creusot, and the vase presented by the city of Paris to the Emperor of Russia in 1897. Many years ago he received the gold medal offered by the Société Centrale des Architectes for the best example of domestic architecture. He was an honorary member of the Royal Institute of British Architects, Past Vice-President of the Société Centrale, and an officer of the Legion of Honor.

A RATHER interesting case in which an architect was concerned came before an English court the other day. An architect was employed to furnish drawings and specifications for a house, and superintend their execution. He agreed to perform these services for five per cent on the cost of the work, and actual travelling expenses, and his proposition was accepted by the owner in a letter in which he said that it was understood that this sum was to "cover everything." The architect wrote the specification, one clause in which provided, as is common in England, that the surveyor's charges for bills of quantities should be two-and-one-half per cent on the estimated cost, with a further charge for drawings, the understanding being that this fee should be paid by the builder, but that it should be added to the contract price. Estimates were obtained, and a contract entered into with a builder, in which the owner and builder agreed that the architect's final certificate should be conclusive as to the amount due him. The architect, without the knowledge, as it appears, of the owner, took out the quantities himself, and was paid for them, as well as for the extra drawings, by the builder. This sort of transaction is very common in England, but the executors of the owner, who had died in the meantime, thought there was something wrong in it, and sued the architect to recover what the builder had paid him, as well as an additional sum, as damages, for negligence in certifying the accounts, and in certifying charges which were erroneous. In regard to the first claim, they alleged that the architect had agreed that his charge of five per cent should "cover everything," so that it should cover the quantities; or, if it did not cover them, that the action of the architect in obtaining payment for them indirectly from the owner was in the nature of an attempt to secure a "secret profit" from his employer, and was therefore illegal. The architect, on the contrary, maintained that the services, as an architect, which he agreed to furnish did not include those of a quantity surveyor, and that, while London architects did not act as quantity surveyors on their own buildings, they often did so in the country, and such a course was not considered objectionable. The court, while it thought that the architect had not acted honorably in concealing from his employer the fact that he was to get indirect pay for the quantities, considered that the agreement between the architect and owner did not include this service, and that the latter was bound to pay for it according to his contract with the builder. In regard to the claim of damages for negligence, the Court said that, as no fraud on the part of the architect was alleged, and, as the owner and the builder had agreed to be bound, without appeal, by his decision, neither of them could be allowed, after the decision was given, to say that he had acted negligently or unskilfully.

THE ITALIAN GARDEN. — I.

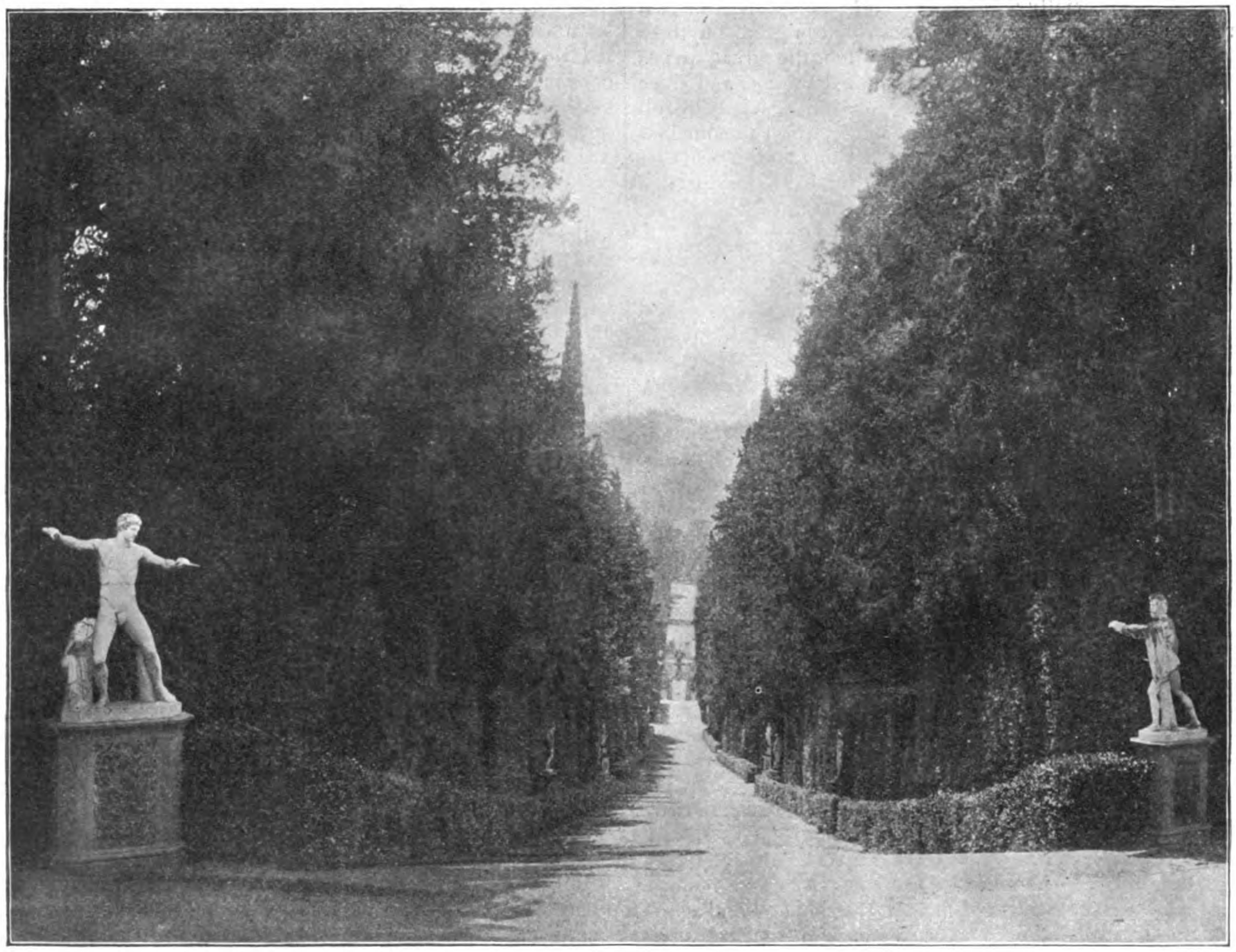
THE Italian garden in the usual sense of this term — the garden of the Italian Renaissance villa — is, as a type, uniquely significant in the history of the art of garden design; for it represents at once the culmination of the ancient and the inauguration of the modern formal garden. The ancient Romans brought together, from all parts of their wide empire, the ideas and materials from which their architects developed the Imperial Roman villa. The Renaissance Italian villa with its garden, directly inspired as it was by Roman examples and precedents, thus became the most important descendant of the villas of the ancients in different parts of the Roman world, and its garden the focus, as it were, to which the rays of tradition and custom from all the most important earlier gardens converged. Thus originated and composed, and embodying the accomplishment of the past, this type of garden became at the same time the prototype of practically all the subsequent formal gardens of the Romanic and Teutonic peoples, particularly those of France and of England, from the latter of which our own have been derived.


View in the Garden of the Villa d' Este, Tivoli.

The significance of the Italian garden as a type thus being manifest, the study of this type becomes of correspondingly exceptional interest. Moreover, additional interest attaches at present to the study of the Italian garden, its distinctive scheme and special features, from its now growing popularity for use in this country.[1]

The subject has often been treated, historically and descriptively. Indeed, writers have hitherto almost exclusively concerned themselves with a series of descriptions of particular gardens. I know, however, of no satisfactory exposition of the principles underlying the design of the Italian garden as a type of formal treatment of the grounds about a residence; and this, primarily, will be my attempt in this paper. I will, then, consider first the general scheme of this garden as a type, and refer to variations of this scheme in some detail with illustrative examples from particular gardens. After this I will give a very brief history of the Italian garden in Renaissance times, closing with a short summary and estimate, and a word on the bearing of this study on present needs and customs of landscape art in this country.

Of the Renaissance Italian villa, unquestionably the most striking character is the harmonious relation of house and grounds. Both were rightly regarded as essential parts of one whole, of one composition. The house, being the more important, dominated, while the grounds, being subordinate, were designed to subserve the effectiveness of the house. The site in each case, however, was generally chosen with the possibilities of the garden very much in mind, and a position was sought which should to the greatest degree possible afford what may be said to have been regarded as the two chief requisites of a complete garden: namely, first an elevation which would command a wide and noble prospect, and second, an abundance of water for garden as well as household purposes. The site being fixed on, the house was designed with reference at once to its natural


Cypress Alley: Boboli Garden, Florence.

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[1] Among our most interesting American examples is the Italian garden laid out by Mr. Charles A. Platt on the Sprague estate in Brookline. For a description of this garden see "Formal Gardens," by Charles H. Caffin, in *Harper's Monthly* for September, 1899, page 557.

surroundings, and to the garden which was to be laid out, as well as to its own essential functions as a house for residence or resort. And the garden in its turn was planned with reference first of all to the "setting off" of the house, and the forming of an agreeable transition from its art to wild nature; and secondly, to the garden's own peculiar duties of pleasure-giving. Thus the garden-plan together with that of the house was first of all controlled by the character of the site, its shape, extent, topography, etc., and secondly, was influenced by its relation to the house, the effect of which it was intended to enhance. For these reasons, and because no two sites were exactly alike, we naturally find no two gardens of like design, and it is indeed difficult to trace any considerable development in form or even the effect of one example on another. This difficulty is moreover greatly increased by the well-known and continually lamented fact that, since a garden, compared with a building, is by its nature far less permanent, very few of these old gardens exist in any considerable degree of preservation, while those that are now in the least ruined condition are so, thanks to "restoration" or other franker changes.

Two more or less separate classes of Italian villas with their gardens are to be distinguished, especially about Rome: first, those on the edge of the city proper, and second, those outside in the suburbs. The former were in general smaller, and, curiously enough, usually more naturalistically treated, as if to give the greater contrast with their more formal urban surroundings. Since, however, these sites had fewer natural advantages in the way of view and water-supply, they were treated with fewer terraces, and also with fewer reservoirs, fountains, grottos, and other ornamental features in which water played a conspicuous part. Here, the house itself, or "casino" as it was called, was seldom a residence, being generally little more than a rendezvous for the day-time entertainment of visitors, and for exhibitions of statuary, frescos, and other works of the fine-arts. Here especially were preserved and displayed the rich treasures of Classic sculpture often excavated in great numbers wherever old sites were built on. Here, too, the great artists of the time were employed to paint beautiful frescos, and since everything here could be pagan, the Neo-Classic spirit held full sway, and the subjects chosen were generally from the ancient mythology. Many of these museums are to-day museums of art and antiquities. One of the most beautiful examples of this first class of Italian villas is the well-known Villa Medici, just outside of Rome.

It was, however, only in the second class of these villas, those out in the suburbs, that the Italian Renaissance garden attained its fullest development. These assumed the greatest importance at the time, and had subsequently the most influence. To the consideration of these then, I shall hereafter almost exclusively confine myself, and to these, when not specifying, I would always be understood to refer. Only I beg that it be clearly understood that the two classes had much in common, that they were but varieties of one type, and that their differences were practically only such as sprang from, first, as concerned the house, the difference in magnitude and elaborateness of the establishment consequent on the difference in the permanence of its residential use throughout the year; and second, as concerned the garden, differences consequent on the difference in amount of land available, and in the natural advantages of the site, especially in the matters of view and water.

Of the buildings themselves, the residences, little here need be said. They were of course in the Renaissance style, and intended as houses of rest, and more or less rural luxury, of pleasure, gayety, and beauty. The need that a man's house should be his fortress had passed, and the villa, as such, did not present a forbidding or even majestic exterior, but on the contrary was distinctly more open and attractive in design, abounding in pleasant courts, and open colonnades, loggias, belvederes, and so on. Their style was characterized by comparative lightness of detail and elegance. Playful fancy was given more rein, grace and beauty took the place of the majesty and sombreness of the urban dwelling or palace. Again, since the sites were, wherever possible, chosen because of considerable elevation, where refreshing breezes blew, and since there was grateful shade always at hand in the neighboring garden and its grove, where the sound of plashing and dripping water contributed to the sense of coolness, there was no longer the same need that the house should be so built as largely to exclude the sun, and the walls were consequently here broken by more frequent windows and doorways. Obviously, it was this greater openness, and graceful, delicate beauty, which made possible the wonderfully harmonious relation between the house and the garden, for the garden, with all its formality, could hardly have been made to harmonize with the ordinary Tuscan palace façade. Sometimes, it is true, the building is a Tuscan palace; for instance, the Pitti.[1] But in such cases, however forbidding the street façade, the side toward the garden in the best examples is less severely treated, to bring house and grounds into agreeable relation.

It is interesting to note here in passing that all parts of the villa, house and grounds alike, were in these times designed by the same architect or architects, and that in designing the garden, as a suite of additional apartments to the house, convenience was seldom allowed to interfere with unity, or indeed in any way with beauty of effect.

Having now considered such preliminaries as have seemed desirable by way of introduction, and as conducing to the clearer and fuller exposition of the subject, it is time to consider specifically the garden itself.

Before proceeding to the special consideration of the garden of the Italian Renaissance, however, it may not be out of place at this point to consider briefly the character and function of any beautiful, humanly-made garden whatsoever, as such, whether of the so-called "formal" or "architectural," of the "landscape" or "naturalistic," or of the "composite" type. For this I cannot do better than quote from Sedding's "*Garden-craft*" passages which clothe in his charming style a garden's true significance. "A garden," he says, "is a place where these two whilom foes — Nature and man — patch up a peace for the nonce . . . and are leagued together in a kind of idyllic intimacy, as is witnessed in their exchange of grace for grace, and the crowning touch that each puts on the other's efforts . . . for neither can strictly say 'I made the garden' to disregard the other's share in it. True that behind all the contents of the place sits primal Nature, but Nature 'to advantage dressed,' Nature in a rich disguise, Nature delicately humored, stamped with new qualities, furnished with a new momentum, led to new conclusions by man's skill in selection and artistic concentration. True that the contents of the place have their originals somewhere in the wild — in forest or coppice, or meadow or hedgerow, swamp, jungle, Alp, or plain hillside. We can run each thing to earth any day, only that a change has passed over them; what in its original state was complex or general is here made a chosen particular; what was monotonous out there is here mixed and contrasted; what was rank and ragged there is here taught to be staid and fine; what had a fugitive beauty there has here its beauty prolonged . . . a garden is, at one and the same time, the response which Nature makes to man's overtures and man's answer to the standing challenge of open-air beauty everywhere."

Naturally, then, the garden, this common meeting-place of art and nature, forms at the same time the happiest and the most natural and easy transition from the one to the other, as represented respectively in the house, and in the natural surroundings. Such a transition, in heightening the effect of the house and harmonizing it with its environment, has always been pre-eminently the function of the formal garden. And the Italian garden was, as we shall see, the formal garden, *par excellence.*

Just as the house, casino, and the minor architectural features of the Italian villa were in style and design naturally the outcome of the architecture and other fine art of the period, so was the garden in its distinctive character pre-determined (as must inevitably be the general character of the garden of any country and people) by the natural landscape of the region, the soil, the climate and the indigenous flora, as well as by the instincts of the race. The last in this case ran, by long centuries of tradition and custom, to the formal in art, rather than to the naturalistic. As regards the existing landscape, Italy being naturally mountainous, afforded elevated sites, charming in themselves, which were, as we have seen, chosen because of the view they commanded, and because they were also more or less steeply sloping. These natural conditions combined with abundance of water at the top of the slope (which was always as we have also seen, wherever possible, provided for in the selection of the site) determined the type of the Italian garden, with its terrace treatment and succession of water-basins at different levels. For under these conditions, as Sedding shows, "Nature herself prompts the division of the garden-spaces into wide terraces, while Art, on her side, provides that the terraces shall be well-proportioned as to width and height, and

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[1] *American Architect* for March 5, 1898.

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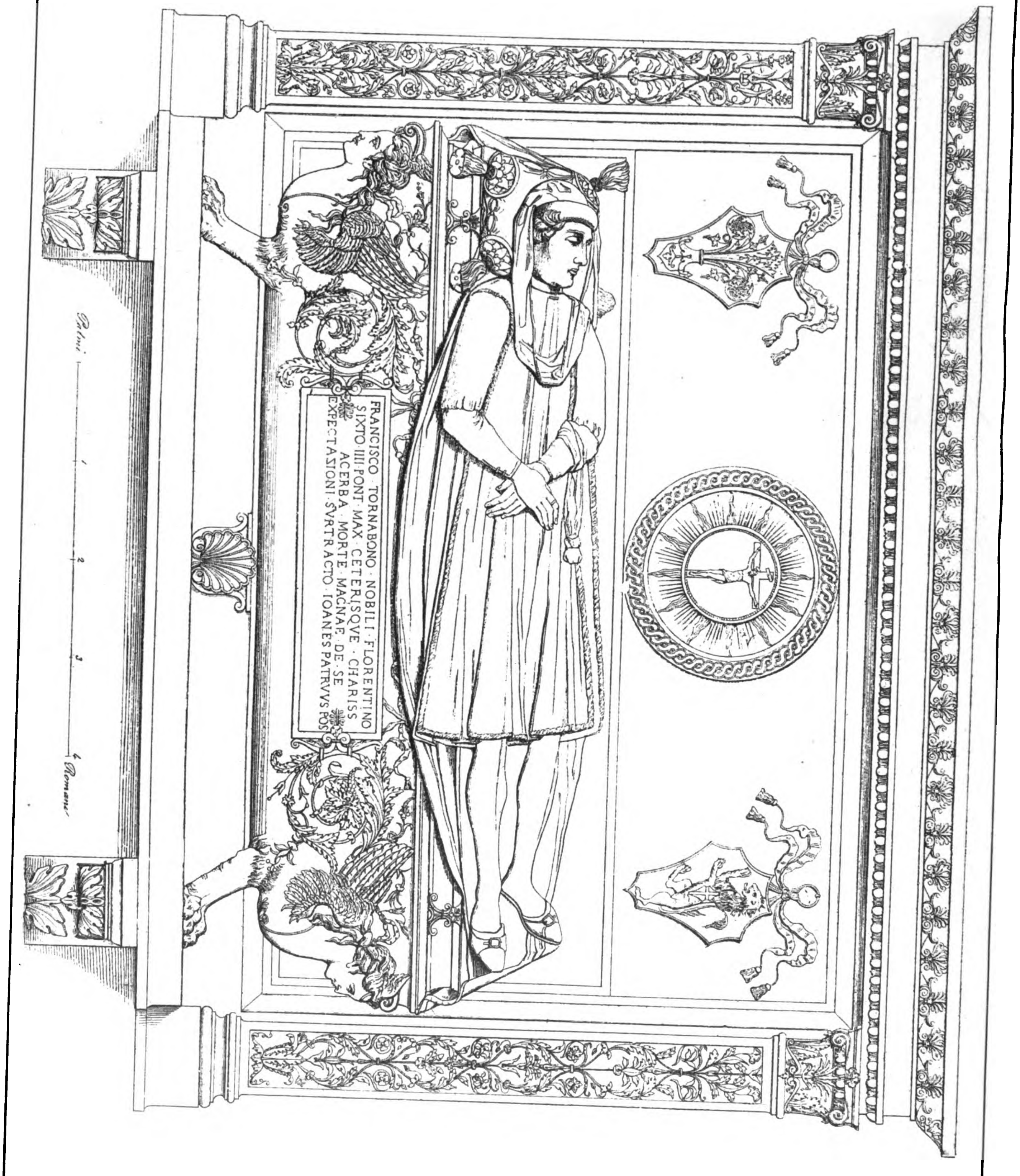
FRANCISCO · TORNABONO · NOBILI · FLORENTINO
SIXTO · IIII · PONT · MAX · CETERISQVE · CHARISS
ACERBA · MORTE · MAGNAE · DE · SE
EXPECTASIONI · SVRTRACTO · IOANES PATRVVS POS
Palmi
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Romani

TOMB OF FRANCISCO TORNABNONI, IN STA. MARIA SOPRA MINERVA, ROME.

AMERICAN ARCHITECT AND BUILDING NEWS, FEB. 10 1900. NO. 1259.

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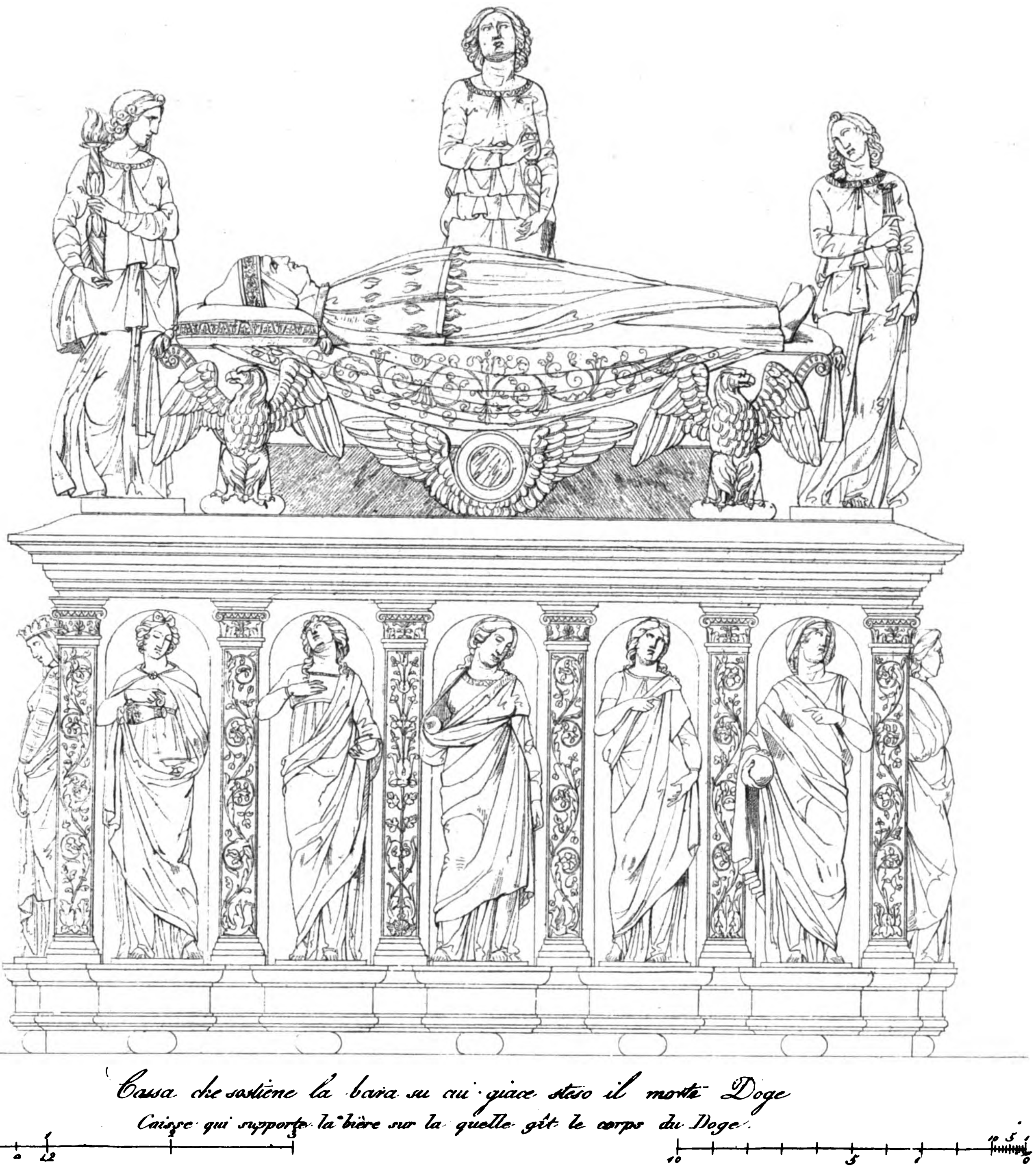
Cassa che sostiene la bara su cui giace steso il morto Doge
Caisse qui supporte la bière sur la quelle gît le corps du Doge.
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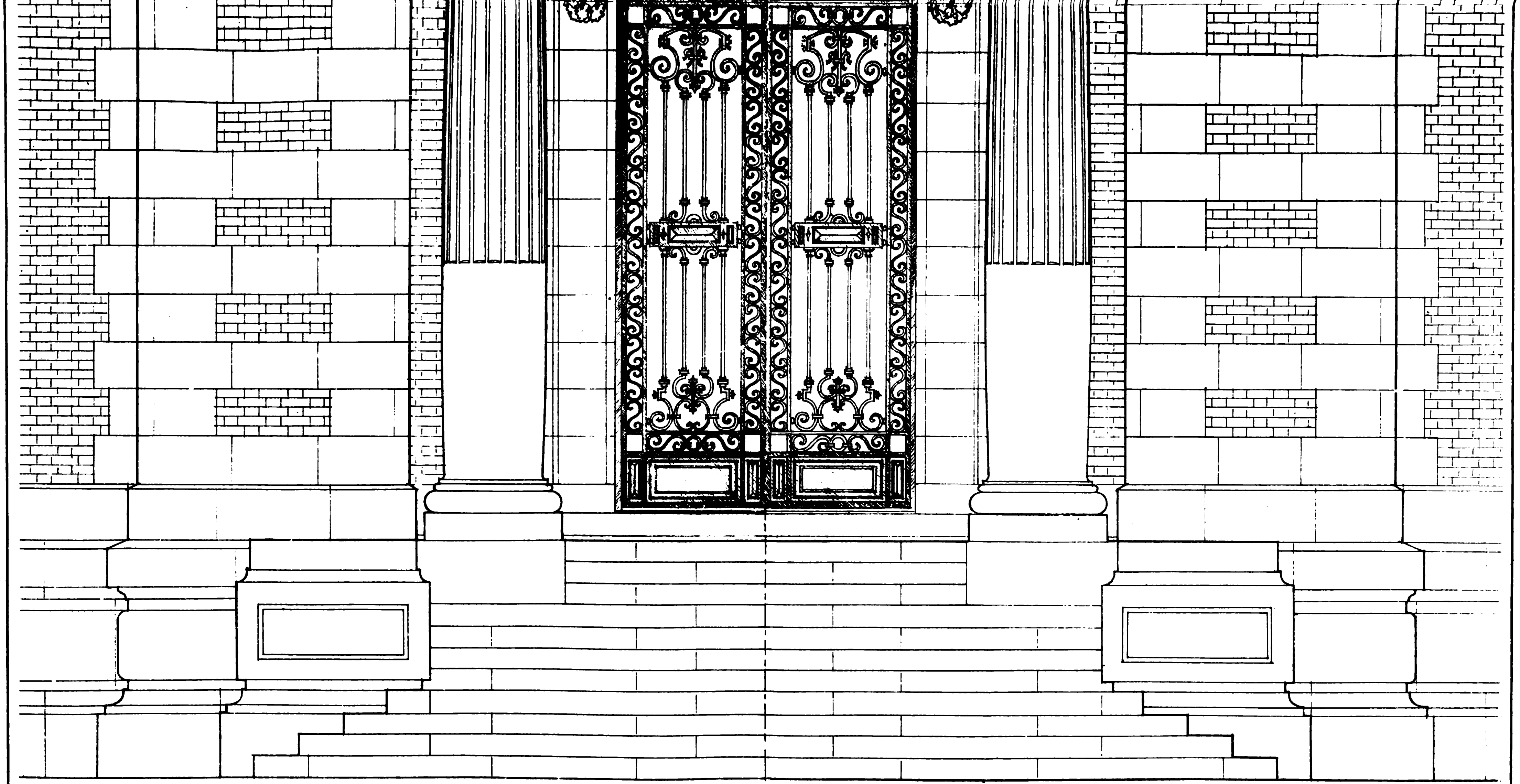
A PORTION OF THE TOMB OF THE DOGE VENDRAMIN IN SS. GIOVANNI E PAOLO, VENICE.



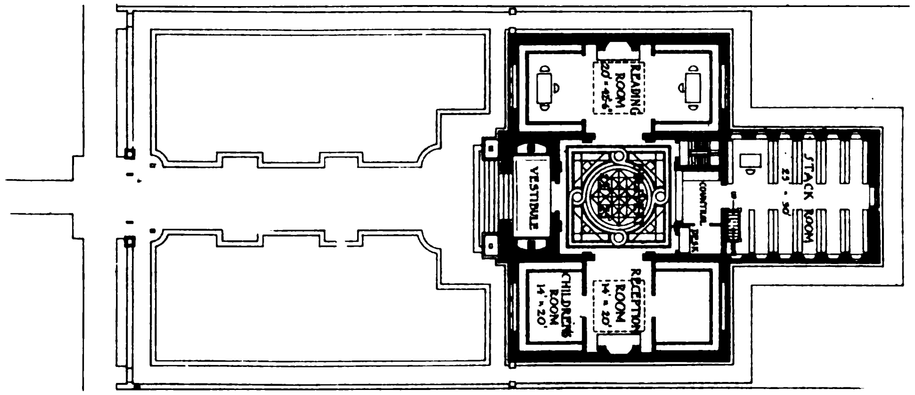
ENTRANCE

CASE-LIBRARY-BUILDING

AUBURN - N-Y-

CARRÈRE & HASTINGS,

ARCHITECTS.



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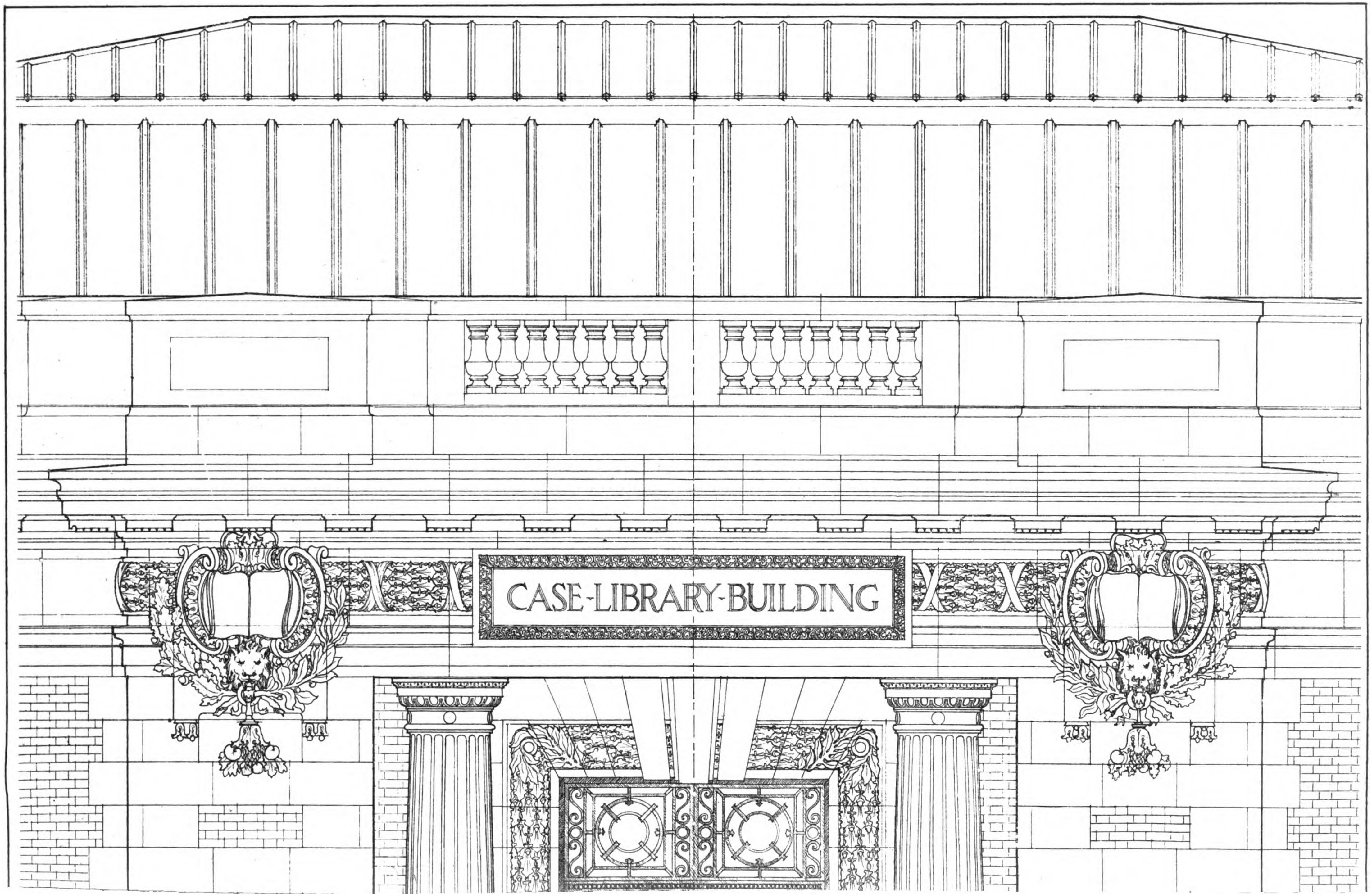

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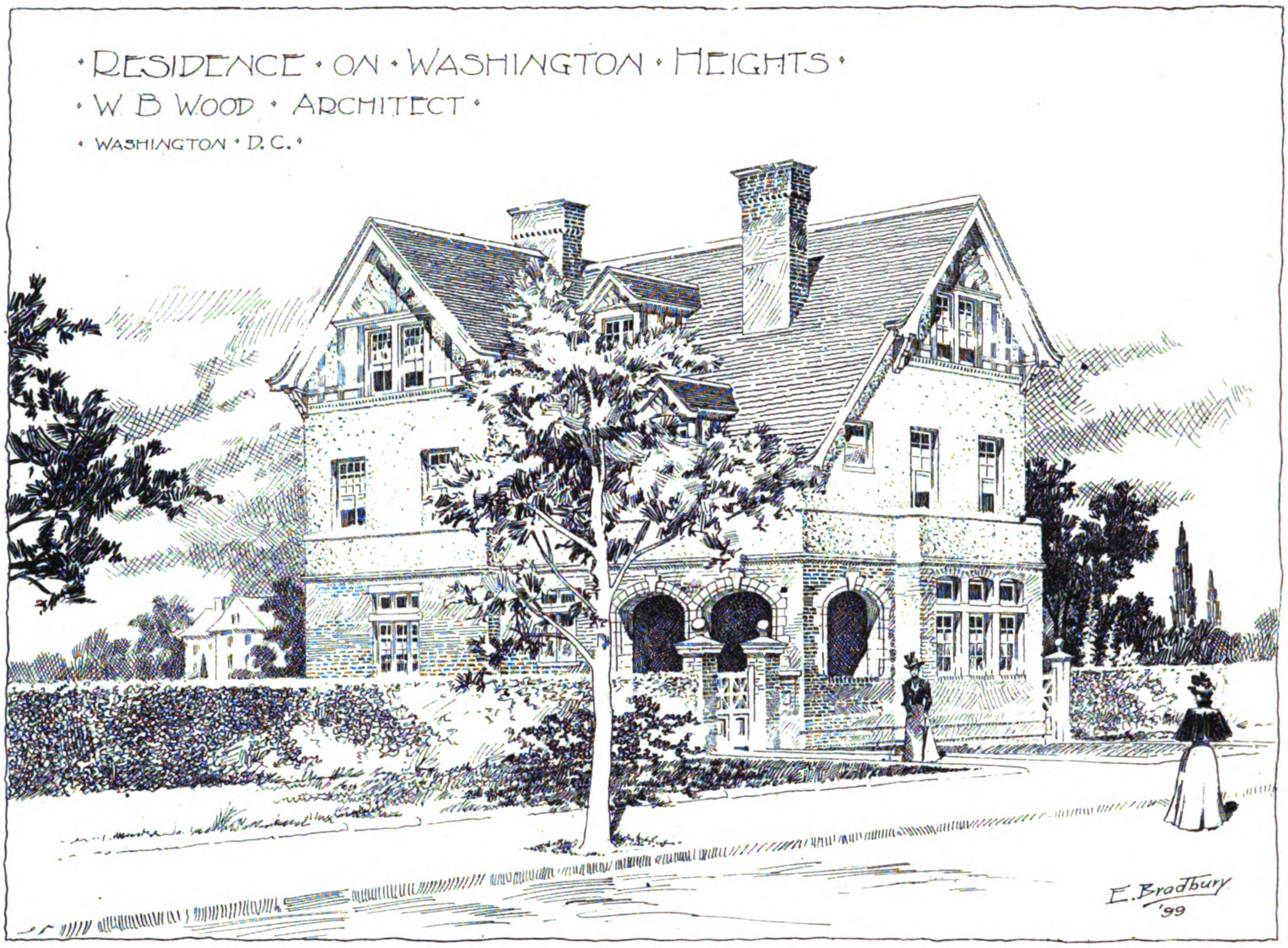

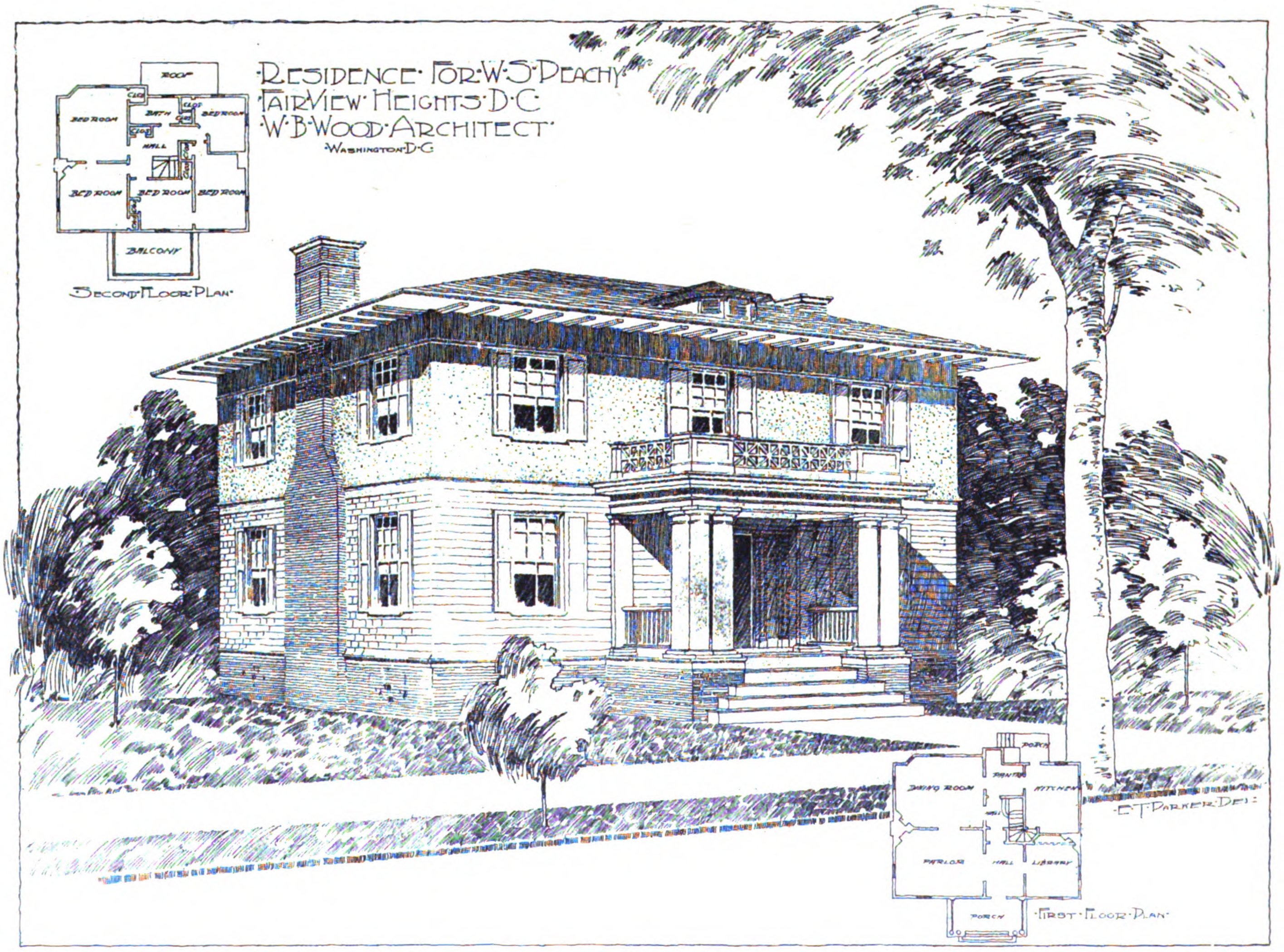

AMERICAN ARCHITECT AND BUILDING NEWS, FEB. 10 1900. No.1259.

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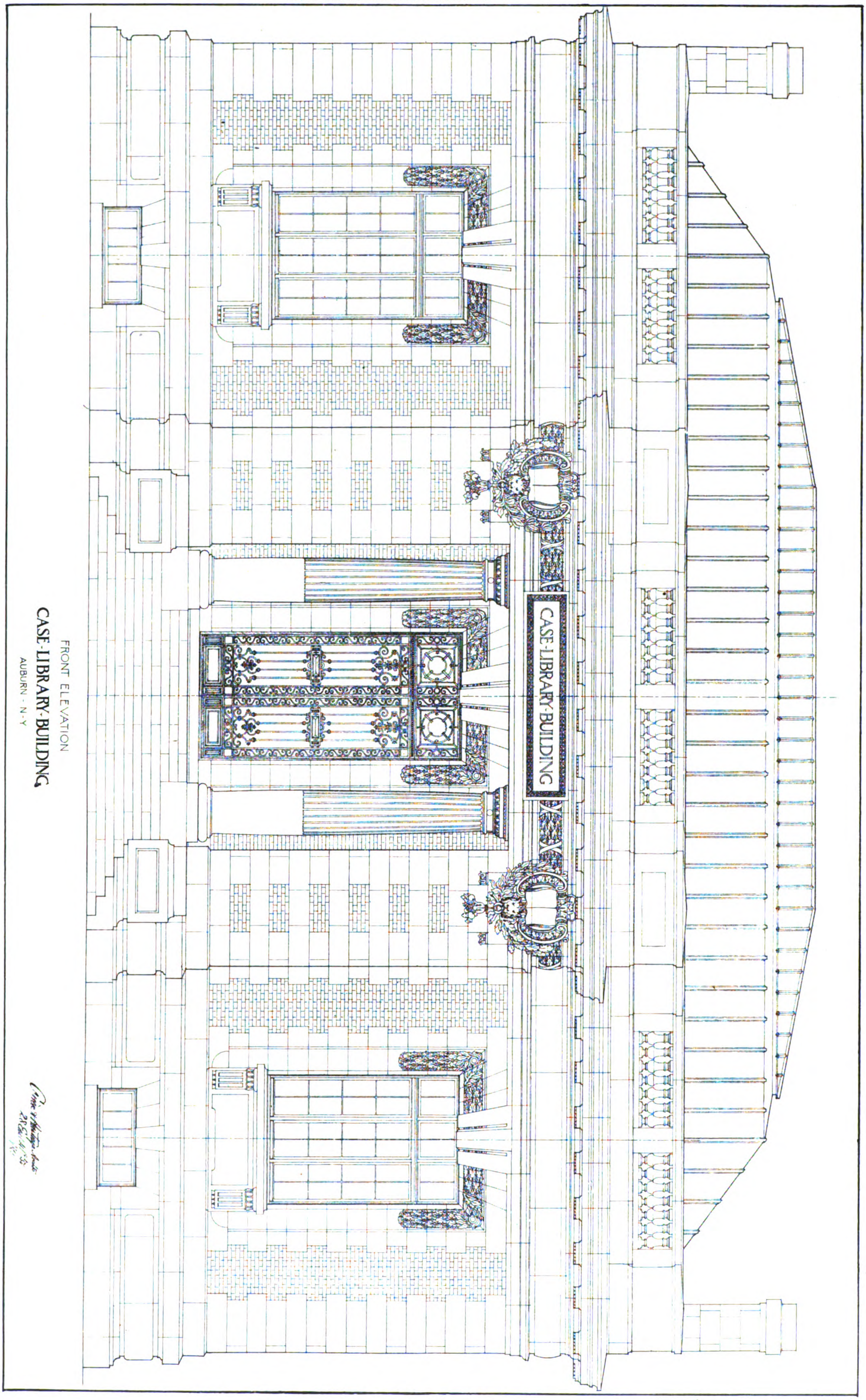

FRONT ELEVATION
CASE·LIBRARY·BUILDING
AUBURN·N·Y

suitably defined by masonry walls having balustraded fronts, flights of steps, arcades, temples, vases, statues, etc."

Finally, the soil and climate determined not only the indigenous flora which was the most important horticultural material used in the building of the garden, but equally the exotics which could grow there, and hence the whole vegetation of the grounds. Thus, in climatic conditions especially favorable to broad-leaved evergreens, the Italians could and did make the utmost use of them, and in the gardens deciduous trees are comparatively rare, the commonest trees and shrubs being the solemn cypress, the ubiquitous ilex (holm oak), and time-honored box with, often, noble pines and oaks, and, in the South, occasional palms.

Comparison of various plans shows that the garden might either form the approach to the house in front, or stretch back from it on the side away from the thoroughfare. In the former case the house itself is generally backed by a formal terrace, leading up to a formal grove or bosket which enclosed some conspicuous water feature, most usually the main reservoir. This is then the highest point on the estate, and the dark mass of the grove forms the background against which the house is seen from the garden below, while if the two be seen together from a greater distance, the garden with its parterre, its terraces and water features, its system of paths and ramps and stairways, serves to lead the eye up to the house, where it stands above, set off against its background of thick wood. Whichever side of the house it be to which the eye is thus led, this façade is designed, as we have seen, with especial reference to its effect from the garden, and the garden is designed to the especial end of giving this façade its greatest possible effectiveness, and this is true whether the garden be wholly open, so that the house can be seen from all parts of it, or whether the garden be so arranged, in accordance with greater diversity of existing or created topography, that the house can be seen only from certain predetermined points in it. Most frequently the house is at or near the highest point, from which it looks off over the garden in the foreground, to the more distant town, or rural, or wild landscape, to finally, often, in the farthest distance, the lovely shores and the great expanse of the ever-changing sea.

The view, the first thing sought by the garden-builder, seems also to be the thing which has most impressed the visitor to the Italian garden up to our own day, and led him into the most glowing descriptions. Hawthorne, for instance, in his Italian note-books, in speaking of the view from the Boboli gardens in Florence, says: "We went on through the garden-paths, shadowed quite across by the high walls of box, and reached an esplanade,[1] whence we had a good view of Florence, with the bare brown ridges on the northern side of the Arno, and glimpses of the river itself, flowing like a street between two rows of palaces. A great way off, too, we saw some of the cloud-like peaks of the Apennines, and, above them, the clouds into which the sun was descending, looking quite as substantial as the distant mountains." And Mr. Platt, in his account of the Villa d'Este, at Tivoli, says: "Looking down from the upper terrace, one sees through a deep cut in the foliage, over a series of fountains and stairways, the large circular fountain on the lower terrace, surrounded by gigantic cypresses, and beyond this, the immense expanse of the campagna. There are many cypresses throughout the planting which have now grown to an enormous size. These, with their hard-cut edges and sculpturesque forms and great depth of color, make a wonderful foreground for the infinitely increasing delicacy of the campagna as it loses itself in the sky at the horizon."

J. S. Pray.

[To be continued.]

JOHN RUSKIN.

It is curious that the modern world turns to Mr. Ruskin's writings more for views upon Socialism than for opinions upon art; and yet to the sober set who have known the great Personality for fifty years, he is far grander and more reliable as an art teacher than as a Reformer. And yet he did great things towards amending our social system. The museum at Sheffield, the fight for improved education, the schemes for bettering the dwellings of the people, and for fairer wages and old-age pensions, were only a few of the reforms for which he was ridiculed years ago, but which have now ceased to be burning questions partly through his enthusiastic and vigorous pleading. But like all enthusiasts he often overstated his case and became unpractical; as when he advocated the same wages for the bad as for the good workman; notably in the volume "*Unto This Last.*" And the same may be said for much of his art criticism, though it is a mistake to speak of his admiration of Turner as blind, and often delusive. No biased devotee would write thus of his idol: "The sea painting is much overrated. . . . Turner's drawing of large waves left them deficient in lustre and liquidity. . . . The want of true foam drawing is a worse fault; none of the white touches in these seas have, in the least, the construction or softness of foam, and there is no spray anywhere." How true this is; but now note the keenness of Mr. Ruskin's criticism: "In reality, in such a sea as this of the 'Shipwreck,' the figures even in the nearest boat would have been visible only in dim fragments through the mist of spray; and yeasty masses of spume would have been hanging about the breakers like folds of cloth, and fluttering and flashing on the wind like flights of birds."

Mr. Ruskin's up-bringing was unconventional. A father in business as a wine-merchant, who took his wife and son about with him when he travelled for orders, thus combining business with pleasure, and giving the boy his first love of nature as they drove through the country, and his first education in art as they gazed at the private collections in country houses; and a devoted and anxious mother who forced him to learn long chapters of the Bible by heart, probably thus giving him the foundation of his noble style; for, as Mr. Frank Bullen reminds us, there is no study so good for acquiring a pure and lucid style of writing as that of the Holy Scriptures. The mother wished her boy to be an evangelical minister, but the boy had a horror of Sundays, and Sunday works; and even the joys of Monday, in being distanced seven days from the Sabbath, did not prevent a "lurid shade" of disagreeable anticipations overwhelming the last days of the week. To a youth possessing this kind of temperament, Holy Orders were neither attractive nor suitable. In early life Ruskin wrote verses, and the parents, of course, imagined their son a poetic genius. But as a poet he used the vehicle of prose, in spite of Matthew Arnold's dictum that Ruskin was trying to make prose do more than it can do perfectly — "that which he is attempting he will never be able to accomplish to his entire satisfaction," except in poetry. But he did accomplish the feat, not only to his own "satisfaction," but also to the edification of the reading public. There are passages in "*Modern Painters*" which, for poetic feeling and beautiful expression, are unsurpassed by any of our modern writers in prose or verse. That this is not extravagant praise, we see from the testimony of George Eliot, who considered that Mr. Ruskin's early volumes were written with the inspiration of a "Hebrew prophet"; and Carlyle desired Emerson to note the "fierce lightning bolts which Ruskin is copiously and desperately pouring into the black world of anarchy around him."

When the family paid their first visit to the Continent, they journeyed by road, upon which subject Mr. Ruskin became, later on, eloquent, but unpractical. His comment upon modern travelling is intensely Ruskinian. "The poor modern slaves and simpletons who let themselves be dragged like cattle or felled timber through the countries they imagine themselves visiting, can have no conception whatever of the complex joys and ingenious hopes connected with the choice and arrangement of the travelling carriage of old times, and of the happiness in the evening hours, when from the top of the last hill he had surmounted, the traveller beheld the quiet village where he was to rest, scattered among the meadows beside its valley stream — hours of peaceful and thoughtful pleasure, for which the rush of the arrival in the railway-station is, perhaps, not always, or to all men, an equivalent." Just so; but were it not for railways, how many of us would ever have been out of our own country, and seen those wonderful towns and works of art which inspired Mr. Ruskin a generation ago? No doubt it is pleasantest to travel *en prince*; but surely we are not all vulgar "simpletons and modern slaves" who cannot do so? The sensation which prompted him "partly" to feel and "partly to vow," when he stood and gazed upon Jacopo della Quercia's exquisite tomb of Ilaria del Carretto, "that his life must no longer be spent only in the study of rocks and clouds," comes to hundreds of the cultivated poor, whose only means of receiving this inspiration is by way of the dirty and noisy railway-carriage; nor is it any fault of theirs if they have to rush through interesting lands by express trains, that they would fain explore at their leisure.

The first volume of "*Modern Painters*" appeared in 1843, under the anonymous authorship of an "Oxford Graduate." Mr. Ruskin was then only twenty-four, and his father thought his youth would tell against the book if the world knew by whom it was written.. It arose out of *Blackwood's* fierce attack upon some of Turner's pictures, but the young author's original MS. defence of Turner has disappeared. It was intended for *Blackwood*, but Ruskin *père* sent it to Turner, who returned his thanks for the "young man's zeal, kindness and trouble." The original title of the book which was the outcome of this polemical essay was "*Turner and the Antients*"; but as it grew into a treatise upon the general principles of art, the actual title became more appropriate. "Art means more than the pleasing arrangements of lines and colors," was one of the writer's dogmas; "that it can and therefore ought to convey ideas, as being a kind of language," was another. And both were summed up thus: "That the best painter is he who conveys the most and highest ideas of truth, beauty, and imagination"; Turner being the example.

Venice and Tintoretto were revelations to the young author, and from their inspiration came "*The Stones of Venice*" and "*The Seven Lamps of Architecture.*" All through these books are the most careful and refined drawings, exquisitely engraved, and doubtless Mr.

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[1] *American Architect* for April 24, 1897.

Ruskin would have succeeded as an artist had he so willed. Adverse critics scoffed at him, as talking about things he could not do; but the little we have seen of his drawings makes us desire to see more, for that little has great artistic value and true feeling for nature.

Mr. Ruskin was sympathetic to those he loved and valued. He encouraged Rossetti, Millais and the rest of the P. R. Bs. He fought for them against a stupid, ignorant public; and even helped them as an art patron. But as an enemy he was bitter with withering satire and caustic expletives — witness his criticism of Mr. Whistler and of Millais when that painter emerged from what Mr. Ruskin considered the right path. As an example of this side of the critic's work, the following may be cited in reference to a "Symphony in Gray and Green," by Mr. Whistler: "'The Ocean.' We can paint a cat or a fiddle, so that they look as if we could take them up; but we cannot imitate the ocean or the Alps. We can imitate fruit, but not a tree; flowers, but not a pasture; cut-glass, but not the rainbow." Again, "The mannerism of Canaletto is the most degraded that I know in the whole range of art." This, of course, is gross exaggeration; but we know that he was frequently driven wild by disappointments in his social efforts for the good of mankind, and this fact may account for some occasional injustice to individual artists. But we owe an enormous debt of gratitude to the man who pointed out to us in our youth the nobility of the works of Tintoretto, of Giovanni Bellini and Carpaccio among the great Italians, and of Turner and Millais among the no less great moderns. He was, possibly, unjust to Michael Angelo and Raphael, but he taught us to love Niccola Pisano, Donatello, Verocchio, Quercia, and all the great unknown who built and decorated our Mediæval churches. If in "*Sesame and Lilies*" and some of the other later works his teaching is eccentric, exaggerated and inconsistent, it is always clothed in sentences of singular beauty. Nor must we forget that without exaggeration reforms would never be carried out. When Ruskin began to send thunder-bolts into the genteel society of the art-loving world, it was steeped in admiration of such painters as Carlo Dolci and Sassoferrato; but long ere he passed away the world had learned to appreciate Velasquez, Rubens and Rembrandt; not perhaps by his absolute influence and teaching (for he was sometimes at variance with those masters), but through his never ceasing guidance in the search after truth in nature and art. His example was ever good, in that he never bowed down to vulgarity, nor did he worship gold. He was rich, but he used his wealth for others. He taught us not to despise simplicity, but to ennoble it; if a drawing had to be made of a tea-pot or a water-butt, it should be executed with as much loving care and truth as if it were the sketch of a mountain range. He never pandered to success or worldliness, and throughout his writings it would be impossible to find one coarse or frivolous expression. He preached simplicity of life and labor, and he lived a laborious and a simple life.

Such was the noble spirit which has passed away from us; and surely no more appropriate words could be found to sum up these notes than the following, taken from "*Sesame and Lilies*." They have not the eloquence and exquisite rhythm of some of his earlier work, but they explain the man's rule of life, which is of as much, or of more, importance.

"And whatever our station in life may be, at this crisis, those of us who mean to fulfil our duty ought, first, to live on as little as we can; and secondly, to do all the wholesome work for it we can, and to spend all we can spare in doing all the sure good we can."

S. Beale.

THE COUR DES COMPTES, PARIS.

THE Parisians who travel on the penny boats between Auteuil and the Pont d'Austerlitz will no longer have to answer the unavoidable question of the English tourist: "I beg your pardon, sir, what is that?" "That" was a somewhat sad spectacle, and the Parisian, though light-hearted enough, always winced a little in answering, more or less politely, according to his humor: "'That' is the remnant of the Palace of the Cour des Comptes, a fine building in its day." "Very long ago?" the English tourist would ask if not well versed in French history, often taking the imposing ruins for those of a Capitole or of a royal palace dating from the Merovingian epoch. "Not so old as that — first Empire; destroyed in 1871 by the Commune." And the Parisian would say no more to the "Engliche," for, as a matter of fact, he did not like to talk much about this dumb, reproachful testimony of national madness, which, for the last twenty-seven years has been left before his eyes, the last among the edifices destroyed by the Revolution of 1871. All the others have been razed to the ground or rebuilt. This last vestige, also, has now disappeared, and the Chambre des Députés, after discarding many others, has sanctioned the project which was brought before the Parliament in November, 1897, by the Orleans Railway Company, to buy the site occupied by the ruins and to build there a station, which is to be completed for the opening of the Exhibition in 1900. Visitors to Paris travelling over this line will be spared the tedious and expensive cab journey from the other side of the Jardin des Plantes; they will, instead, arrive on the Quai d'Orsay, in a square occupying the space between the River Seine and the Rues de Lille, Bellechasse and Poitiers.

The Cour des Comptes, originally intended for the Foreign Office, was commenced in 1810 under Napoleon I, who took the greatest interest in the plans which were prepared by the architect Bonnard, Prix de Rome. The emperor, who, as every one knows, had an unusual amount of confidence in himself, and meddled in everybody's affairs, insisted on having the plans brought to him once or twice a week, and, as the wretched Bonnard wrote to one of his friends: "The big red pencil of his Majesty makes such a network of new lines on my drawings, altering and rearranging every detail, regardless of the practicability of his ideas from an architect's point-of-view, that *le bon Dieu* alone knows if I shall ever be able to complete the plans." Bonnard's presentiments proved to be correct, for the fall of the autocrat and his own death took place before the completion of the palace. After the Restoration, and under Charles X, the work was carried on slowly and without enthusiasm by Lacornée, who was a pupil of Bonnard, and although in 1820 a sum of 5,354,101 francs had been already spent, it was only under Louis Philippe that the work was again taken up and at last finished, in 1842, at the cost of 9,874,480 francs.

It is generally believed that the members of the Commune were the sole destroyers of the palace; but a rumor circulated after the fall of the second Empire accusing the partisans of Napoleon III of the crime of destroying the building, or with having excited the infuriated mob to do so, the emperor and his principal ministers having good reasons of their own to wish for the total disappearance of some secret state papers too well conserved there. This is the way in which the good Republicans and the enemies of the Empire tell the story of the fire, but the true facts are that Eudes, one of the generals of the Commune, and Megy, together with a few other leaders of the Revolution, decided that the building should be searched and the Imperial documents brought to light. So they arrived one morning at the gates and forced M. Noel, the governor of the palace, to give up the keys of the private rooms entrusted to his care. They were, however, disappointed, and found only a few certificates of deaths, births and marriages in the Imperial family, and some autograph letters of Napoleon I. The believers in the rumor explain this by saying that M. Noel had foreseen the possibility of a search and had hidden any compromising documents which he had under his charge. He remained there unmolested till May 2, when the military chiefs of the revolution, seeing that resistance was impossible and that the troops sent by Thiers from Versailles would soon be within the walls of Paris, decided to destroy the principal monuments of the capital and leave behind them nothing but ruin and destruction. The reason of this determination is not easy for any Englishman to understand; perhaps the leaders of the Commune did understand it, but it is doubtful whether there was any other excuse except the love of wanton destruction, so dear to the hearts of the French mobs. Nôtre Dame escaped almost by a miracle, as did the Louvre, but the Cour des Comptes burned with the Tuileries, the Hôtel de Ville, and all the private houses of the aristocracy around them. The Palace of the Légion d'Honneur was saved owing to the extreme courage of two men, who, at the risk of their lives, entered the building, already partly in flames, and rolled away the barrel of powder put there by their friends. From the Palais Royal to the Champ de Mars there was nothing to be seen but a huge blaze surrounded by a joyous mob of lawless men and women, who were only prevented from committing further excesses by the timely arrival of the troops.

No one knows the names of the men who forced the gates of the Cour des Comptes and followed M. Noel through the rooms and the galleries, covering him with their guns till he was forced to leave his post of honor. Then they proceeded to smear the walls with petroleum. A barrel of powder was brought into the Great Hall and at a given signal, blown upon a clarion, the building was set afire and the secrets of state destroyed.

Paris did not lose a marvel of architecture, it is true: the palace was a hopeless mixture of styles,— the exterior was far from beautiful, and the interior decorations were heavy and without any character. The rooms in which for a time the Council of State was held were always said to be the most striking, but the Parisians who remember the huge building say frankly that it never was so beautiful and so picturesque before it had been gutted by the explosion of 1871. The principal frontage was on the Rue de Lille, though the best known was that on the Quai d'Orsay; both were somewhat alike, and showed evident proofs of their having been built by more than one architect and under more than one government. The columns of the *rez-de-chaussée*, which were raised about seven feet above the ground, were of the Doric order; those of the first floor were Ionic; the ornaments of the top were pure Renaissance, and the whole, to the lover of classical harmony, was a simple cacophony. The entire length of the building was pierced by nineteen arches, forming both on the side of the Quai d'Orsay and the Rue de Lille and round the large Cour d'Honneur open loggias on the ground and first floors, giving to the building a breadth of light and shade which made it striking. In the interior of the palace were three Cours d'Honneur, giving access to the different halls and state rooms, most of them decorated with panels of various merit. The best ones were those of the grand staircase (the work of Theodore Chassériau), which were not completely destroyed. The groups personifying Silence, Meditation, Study, War, Force (the last one being a masterpiece) consisted mostly of female figures skilfully treated.

As long as the question of the reparation of the palace was pending the pictures were left covered with linen and thick layers of brown paper; last year they were brought to light and found to be in a fairly good state of preservation. They are going to be removed to the Louvre galleries. In the Salle des Séances some mural decorations by Gendron, representing the hours and the principal events in human life, have been very much spoiled. Some photographers have endeavored to reproduce a few panels that are to be kept in the National Library.

For some years before its final destruction no one except the workmen and one or two privileged artists was allowed in the ruins on account of the increasing danger caused by the constant falling of bits of walls and half-detached stones, treacherously hidden under creepers of all sorts, for during the twenty-seven years which had passed since the fire, the palace had been left untouched, and a most copious growth of vegetation had sprung up. Mr. Vallon, the well-known botanist, counts no less than one hundred and fifty-two kinds of plants, amongst which all sorts of animals, birds and reptiles live. For many years a large colony of rooks built their nests in the ruins, but, together with the other noisy tenants, they have been frightened away by the gang of workmen who came every morning with picks and axes to destroy their homes. And soon a modern building, which, let us hope, will be erected with enough taste not to spoil the fine view along the shore of the Seine, will stand on the spot which was once occupied by the ruins of the Cour des Comptes.—*George C. d'Albi in the Builders' Journal and Architectural Record.*

THE ILLUSTRATIONS

[*Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.*]

THE CASE MEMORIAL LIBRARY, AUBURN, N. Y. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

THIS library is now building at the cost of Mr. Willard E. Case as a memorial to his father.

It may be of use to point out that several designs submitted in the original competition for this building were published in our issues for November 26, 1896, and May 15, 1897.

MAIN PORCH OF THE SAME.

TOMB OF FRANCISCO TORNABUONI, IN STA. MARIA SOPRA MINERVA, ROME, ITALY.

THIS plate is copied from Fontana's "*Raccolta delle migliori Chiese di Roma e Suburbane.*"

A PORTION OF THE TOMB OF THE DOGE VENDRAMIN, IN SS. GIOVANNI E PAOLO, VENICE, ITALY.

THIS plate is copied from Cicognara's "*Le Fabbriche e i Monumenti conspicui di Venezia.*"

HOUSE AT WASHINGTON HEIGHTS, D. C. MR. W. B. WOOD, ARCHITECT, WASHINGTON, D. C.

THIS house, which cost $15,000, is built of brick, with stucco walls for the second story and slated roof.

HOUSE FOR W. S. PEACHY, ESQ., WASHINGTON, D. C. MR. W. B. WOOD, ARCHITECT, WASHINGTON, D. C.

THE cost of this house, executed in wood, has been about $6,000.

[The following named illustration may be found by reference to our advertising pages.]

LIGHTS AND SHADOWS OF A BYGONE DAY. DRAWN BY MR. H. W. BREWER.

THIS plate is copied from *The Builder.*

[Additional Illustrations in the International Edition.]

NORTHEAST PIER OF THE DEWEY MEMORIAL ARCH, NEW YORK, N. Y. MR. PHILIP MARTINY, SCULPTOR.

[Gelatine Print.]

PARLOR MANTELPIECE: HOUSE OF ADDISON CAMMACK, ESQ., TUXEDO PARK, N. Y. MR. BRUCE PRICE, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print.]

THE MECHANICS' NATIONAL BANK, PITTSBURGH, PA. MESSRS. ALDEN & HARLOW, ARCHITECTS, PITTSBURGH, PA.

[Gelatine Print.]

A CHURCH IN THE SUBURBS OF MUNICH, BAVARIA. HERR AUGUST THIERSCH, ARCHITECT.

[Gelatine Print.]

THE COURTYARD FRONT: "MINLEY MANOR," FLEET, HANTS, ENG. GEORGE DEVEY, ARCHITECT.

CHAPEL FRONT OF THE SAME.

COMMUNICATIONS

[*The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.*]

HOW TO CHEAPEN THE COST OF A BUILDING.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Architects are peculiarly subject to memorable experiences in the course of their professional activity in many ways, not the least of which is the frequent attempt on the part of the general public to obtain something for nothing when dealing with an architect: in the preliminary stages of the intercourse between client and professional adviser when a prospective building operation is the subject; or when, later on, the proposition having taken on more definite shape, active operations of building and construction are actually under way; or when, having been entirely completed, the adjustment of accounts between client and architect is taken up. Many dodges are resorted to, either to withhold part of the fees, or to refuse payment of fees on things which the owner has undertaken on his own account (after getting the necessary information from the architect) on the flimsy pretext that the architect "had nothing to do with" this particular part of the work, and which the architect reluctantly yields rather than gain at the end of uncertain litigation, — these and many similar cases, no doubt, every architect has encountered at some time in his career without special note, except to marvel at the coolness and adroitness with which the attempt is made.

The following case, which has been recently mine, however, is so novel in some of its features, and one to which any architect may be unwittingly subjected, that I give it as an item of experience, the knowledge of which may be not without benefit to other professionals.

Some time since I entered into contract with a corporation to design and supervise the erection of several buildings, the whole being a project of some importance and prominence; my professional fees, as mentioned in the contract, being "remuneration on the cost" of the completed structure. After the signing of this contract by the principals, the interests of the owner were to be represented by a minor official, and my relations in the premises after this were entirely with him.

The contracts entered into with the contractors for the construction of the several portions of the work stated that payments were to be made on the first day of each month for the work performed during the preceding month, and that only seventy-five per cent of the value of the work performed was to be paid for at such time, the remaining twenty-five per cent being retained by the owner until thirty-five days after the completion of the work of the contract, to comply with the requirements of the State lien law.

In the course of time one of the contractors failed and abandoned his work; this occurred in the middle of the month, so that in addition to the unpaid twenty-five per cent of his contract, there was also due at the time of failure the value of materials furnished and work performed during the half month, together with the value of materials on the ground, involving, all told, a value of approximately five thousand dollars. This value the owner claimed as an offset for the loss it (the owner) sustained by virtue of entering into new contracts for the completion of this particular part of the work; incidentally this condition threw much additional work on the architect in the way of adjustments, etc.

A suit at law was commenced for the recovery of these five thousand dollars by the sub-contractors, etc., to the bankrupt contractor, and this suit was pending when, on completion, my bill for services was presented. It was disputed by the aforementioned official, and turned over to the attorney for the corporation to take action on in the absence of the higher officials. His reply explains the position an architect might easily be placed in under similar conditions by an over-zealous minor official who was straining at technicalities which were neither right nor just, and the enforcement of which was certainly dishonest. I quote from the reply:

"As to the items claimed under the abandoned contract for twenty-five per cent unpaid, work from beginning to middle of month, and materials on hand at middle of month, if the construction of the mechanics' lien law contended for by us be adopted by the Court, we shall not be liable to the material-men or laborers asserting claims against the contractor for any of these items, and if we shall escape payment of same, they will not, of course, constitute any part of the *cost* of the buildings, and the architect would not be entitled to such commission. This matter is now in the courts in the mechanics' lien cases, and will doubtless be finally disposed of within a few months. In the meantime, the proper course with regard to architect's charge for commissions thereon would be to hold same in suspense until the determination of our liability by the Court, and settle with the architect for the remainder of his bill, with this understanding as to the items in question."

I would say in conclusion that the materials left on the ground by the bankrupt contractor were appropriated by the corporation and used in the continuance of work under the new contract. After waiting for six months and some controversy, my bill was paid, notwithstanding that the suit under the abandoned contract had not been terminated.

Sanf.

"ELLICOTT SQUARE:" A CORRECTION.

81 Plymouth Avenue, Buffalo, N. Y., February 3, 1900.

To the Editors of the American Architect: —

Dear Sirs, — Mr. Burnham writes me that the mechanical plant was designed by Charles W. Wilkes, of the Burnham office, instead of the Jonathan Clark & Sons Co. It seems I was misinformed. Mr. Burnham would appreciate the correction of the error.

Yours very truly, F. L. Wilson.

NOTES AND CLIPPINGS

Electric-power from Garbage. — Mr. George Westinghouse has written a letter to a New York paper which is big with promise of better things for the dwellers in cities. As is well known, the extension of electric traction in New York, as in so many other cities of the United States, is leading to the erection of vast power-houses in which steam-engines of enormous capacity are the prime movers. Mr. Westinghouse warns his brother engineers that this procedure is a mistake, and ought to be, if it is not, obsolete. By one blow he promises to demolish the difficulties that beset the path of the municipal engineer, and, while disposing of refuse, will solve the water problem, abolish smoke, and supply power for rapid transit. His plan is as follows: "There are," he says, "created daily in New York about five hundred tons of garbage, or at the rate of ½ pound *per capita.* Such garbage is about twenty per cent carbon and eighty per cent water. By a process well demonstrated on a small scale, and which is being rapidly brought to a commercial basis, all of this garbage can be economically, and without offensive odor, converted into a fuel-gas of great value. In the same apparatus, and by the same process, soft coal can be made into a gas suitable for power and heating purposes." The gas thus produced is to be used for operating gas-engines, which in turn will drive electric-generators, the current produced being used for lighting or power purposes. Refrigerating water for the gas-engines will be taken from and returned to the river. This will relieve the town water of the duty of feeding boilers, and as it is estimated, 20 per cent of the water-supply is used for generating steam, the growing difficulty of water-service in New York will be pushed into the background. The name of Westinghouse is one to conjure with. More than once already the great American engineer has shown the way to higher planes of engineering enterprise, and, while at first derided, has at last proved himself triumphantly right. His present suggestions are fascinating from their boldness and heroic proportions. He bids the chief engineering authorities in his own country, the chosen land of progress, pause in their titanic scheme of laying down 375,000 horse-power in steam-engines. "The plans," he says, "are based upon an imperfect knowledge of the subject;" they are "as far from the best as are the old cable systems for the propulsion of cars." Statements so positive, coming from an authority so high, cannot but cause any engineer to reconsider his position. We know already that by burning town refuse steam can be raised, and it will be interesting to learn from Mr. Westinghouse quantitatively what the economic value of garbage is, used in the manner he proposes; what proportion of the one-fifth constituent of carbon in the garbage will be needed for the evaporation or dissociation, as the case may be, of the four-fifths of water; and also what percentage of soft coal is consumed in the apparatus. We have no doubt Mr. Westinghouse can give thoroughly convincing figures on the whole problem. — *Engineering.*

St. Maria Liberatrice to be demolished by Forum Excavators. — At last I am happy to be able to announce that the days of the Church of St. Maria Liberatice, an ugly little edifice familiar to all who have visited the Forum (through being wedged in between the roots of Caligula's palace and the temple of Castor), are numbered. Negotiations between the Minister of Public Instruction and the confraternity to which it pertains have been somewhat protracted, owing to the fact that the latter demanded for it no less a sum than 1,000,000 lire in compensation. Wiser counsels have, however, reduced this demand to something like 375,000 lire, and at this figure the church will disappear. Needless to say, there are other lovers of Rome to whose eyes, ugly as it is, it has become sacred by long associations. To them its removal will seem to be little short of a violent act of vandalism worthy of a new order of things in Italy for which they can have nothing but very hard words. Such divergences of view will always prevail while people value or condemn the same object according to such differing standards of estimation. Its history and name take us back to almost Pagan times; and in the mediæval days it was known as St. Maria dell' Inferno. This title originated in an early legend of a dragon whose pestilential breath killed all who came that way, but which was finally slain by S. Sylvestro. According to an ingenious and probable surmise of the late G. B. di Rossi, this dragon may merely have personified the Pagan fire-worship of the Vestals, which reluctantly succumbed to the powers of Christianity. The Vestal temple, it will be recollected, was situated within a stone's throw of the church. Whether this was the actual case or not is not provable. Nevertheless, we know that the ancient springs of Juturna, which are situated almost beneath it, have at various periods caused pits and pools to form thereabouts by reason of subterraneous erosion of the tufa rocks. Whether hot springs emitting vapor have made themselves temporarily aggressive on any of these occasions we are not told. One might almost venture to suggest a new idea, and question whether the pestilential breath of the dragon may not have been in reality that of the then-lost-sight-of "Cloaca Maxima," which, unbeknown to the mediævals, was running below their feet hard by, though perhaps now and then choked with rubbish. The removal of this church will be the first step toward the noble scheme in Signor Baccelli's mind for reuniting the Forum and the Palatine, which henceforward should have but one entrance in common. — *Rome Correspondence of the London Globe.*

Curious Interments. — When Charlemagne's tomb at Aix-la-Chapelle was opened by the Emperor Frederic Barbarossa in 1165, he found the body not reclining in a coffin, but seated on a throne as one alive, clothed in the imperial robes, bearing his sceptre in his hand, and on his knees a copy of the Gospels. Murray's "*Handbook to Belgium*" may be consulted with reference to this. About the strangest kind of burial that I have come across during my researches is one chronicled in the register of Lymington Church, Hampshire, where the following appears under the year 1786: "Samuel Baldwin, Esq., sojourner in this parish, was immersed without the Needles, *sans cérémonie,* May 20." It seems that shortly before his death, Mr. Baldwin intimated his desire to be buried at sea, in order to disappoint the frequently-expressed intention of his wife that, if she survived him, she would, out of contempt for him, dance on his grave. There is a delicate vein of humorous irony conveyed in the husband's dying request, which I should think, had rarely been equalled on such an occasion. It is recorded that Mr. Charles Byrne, the famous Irish giant, who died at the end of the last century, urgently requested that he might be buried at sea, in order to escape the hands of the surgeons. This, however, was not complied with, for his skeleton, measuring 7 feet 8 inches, is now in the museum of the College of Surgeons. It is said that William Hunter purchased the body, giving £500 for it. — *Carpenter and Builder.*

The Cost of Strikes. — The report of the chief labor correspondent to the British Board of Trade on the strikes and lock-outs in 1898, which was issued recently as a parliamentary blue book, states that the number of disputes last year was 711, or considerably less than in any of the four previous years. If measured, however, by the number of persons involved, 1898 presents an exact average of the five years, and if judged by aggregate duration, it will, the report says, be found that 1898 presents a higher total of working-days lost than any of the four preceding years. A tabulated statement shows that the number of workpeople affected by strikes and lockouts last year numbered 253,907, while the aggregate duration of working-days thus lost was 15,289,478. This large aggregate, it is explained, is due to the fact that the one great dispute of the year, the Welsh coal-trade dispute, not only involved a greater number of persons, but lasted for an exceptionally long period. Tabular statements show that the number of workpeople directly affected by disputes beginning in 1898 was 200,769, settlements in favor of workpeople affected 45,490, while the settlements in favor of employers affected 120,667. Disputes affecting 34,501 workpeople were compromised. — *Boston Transcript.*

Felling a high Chimney. — A brick chimney, 160 feet high and 8½ feet square at the base, and 4½ feet diameter at the top, has been overthrown in St. Louis by the use of hydraulic jacks, says the *Engineer.* The chimney was first undermined on one side, and three 10-ton hydraulic jacks were placed in position under the side. A hawser was then fastened about the chimney, 60 feet from the ground, and ropes led from this hawser to crabs placed at a distance of about one hundred feet. With eight men at each crab and men at the hydraulic jacks, the chimney was slightly lifted and pulled at the same time; the men at the jacks left their posts at the first warning crack, but those at the crabs continued their work until the chimney fell. — *Scientific American.*

American Academy in Paris. — An application has been before the Paris Municipal Council with a view to obtaining from that body a plot of ground for the construction thereon of an American Academy, wherein young persons of both sexes from the United States could terminate their literary, artistic, and scientific studies. The proposed foundation is to be organized on lines similar to those of the French school in Rome and Athens. The initiative in the matter is due to the American National Institute. It is affirmed that a sum of £50,000 has been set aside by the Institute mentioned for the construction of what will no doubt be called the American School in Paris, just as the French talk of their "Ecole de Rome" or "Ecole d'Athènes." The Paris Municipal Council has granted a site with a long lease for the new institution. — *London Telegraph.*

Surface-car Travel in New York City. — "In order to appreciate fully what it means to operate the surface roads in New York," said Mr. Vreeland, the president of the road, "and to keep things moving, one should know what we are expected to do. There are in the United States about 184,000 miles of steam railroads, and on these roads there were carried last year about 514,983,000 passengers. The Metropolitan Street Railway has about 284 miles of tracks, and carried on these about 255,835,000 passengers, nearly one-half the number carried on the 184,000 miles of steam railroads." — *Exchange.*

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THE Building Trades' Council of Chicago has given notice that all members of the unions connected with the Council will be ordered to strike on Saturday, unless the contractors in the meantime accede to certain demands. As the latter show no disposition to yield to these demands, it seems quite probable that sixty thousand men will be out of work next week. It is generally understood, whether correctly or not, that the question at issue is that of arbitration, the unions having changed their minds about the Board of Arbitration which was agreed upon not long ago between them and the contractors, while the latter insist upon this as the only way to avoid ruinous disputes. As very little building is now being done in Chicago, on account of the high prices of materials, a better time could hardly be chosen for a strike, so far as the contractors are concerned; and it may be observed that the officers of the Building Trades Council may not be unaware of the fact that a time when there is not much work to be done is usually found to be appropriate to grand labor demonstrations. When there is plenty of employment for every one, it is difficult to get men to give up a good job at the order of a walking-delegate; but when work is falling off, and the contractors are discharging their inferior men, and keeping the better ones at a loss to themselves, it is easy to get men to drop their tools who know that they will soon be discharged in any case, and those who have already been discharged are sure to encourage any movement which will bring their more favored comrades into the same condition with themselves.

THE Board of Education of New Haven announces that it will receive, until * P. M. of February *, sealed proposals "for architects' services in preparing designs, plans, specifications, estimates and for full professional services for a school-building to be erected on the lot corner of Canner and Livingston Streets. . . . The right to reject any and all bids is reserved." It is quite probable that the Board of Education of New Haven knows the kind of professional assistance that this invitation will attract, but is compelled by some city ordinance to advertise for bids for this as well as all other kinds of service to the city; so that we will not address our observations to it; but the citizens and taxpayers who will have to pay for the building should be warned that prudent men do not generally find it a profitable operation to entrust large sums of money to the persons who will undertake the charge at the lowest price. We will not say that the architects who will respond to this invitation, particularly those who make the lowest bid, may not be the most honorable and skilful in the profession; but it can at least be pointed out that an architect without the first of these qualifications could take the commission for nothing, and yet secure for himself without difficulty, and without detection, a remuneration at least two or three times as great as would be charged by the best men in the profession.

EVERY experienced architect can tell many stories in illustration of this position, but two will be enough for the present. An architect who found very little employment of any other kind was once employed, very probably on account of his "reasonable charge for his services," to build a schoolhouse. The commission was not a large one, but the work dragged a little, the architect, meanwhile, giving evidence of great prosperity. One of his friends congratulated him on his improved circumstances, asking what other work he had in hand besides the school-house. "Nothing," replied the architect; "but a man must be a fool who cannot make a good living out of one public building." The second story will, perhaps, cast a little light on the first. A very distinguished and experienced architect was once asked by a client if he would not, as a favor, do his work for less than the regular five per cent. "Give me a little discount," said the client, "and you may get all you can out of the contractors." The architect laughed. "If you will put that in writing," he said to his client, "I will give you five per cent." It ought to be evident enough that an architect who takes perhaps two or three per cent commission from his client, and ten from the contractors, is a more expensive professional adviser than one who charges his client five per cent, and neither takes any money from the contractors nor allows them to steal any from his client, but it seems to be difficult to persuade inexperienced people of this. In point of fact, where there is collusion between a dishonest architect and the contractor, a great deal more than ten per cent on the amount of the contracts is often paid to the former. We have repeatedly known twenty per cent on the amount of large contracts to be offered the architect for his influence in "throwing them in the way" of certain bidders; and, while such an offer to an architect of reputation would simply insure the award of the contract to some one else, it is easy to see that a dishonest one can without difficulty bargain for a much larger share of the plunder.

THE average committee-man may, perhaps, say that, as the bids for a building, or for work in it, are based on definite plans and specifications, it would be impossible for any bidder to add any considerable sum, destined for the architect, to his bid without making it so high as to exclude him from all chance of receiving the award. Unfortunately, however, theory and practice do not agree in such matters. In the first place, it is a simple matter for the architect to drop a hint to the bidders, all of whom come repeatedly to his office, that a certain percentage is to be added to each bid for his benefit, and those valuable members of the profession who can derive a good living from a single public building often adopt this plan. We have seen bidders add up their figures, with the usual provision for contingencies, and, before making out the total, draw the architect aside, and ask, "And how much is to come to you, sir?" It is plain that an addition of thirty, or even fifty per cent for this purpose, if made by all the bidders, would not affect the award, and it could not possibly be detected by any member of a school board who was not himself an expert architect or builder. But this is by no means the only way in which an unscrupulous architect can rob his employer. Instead of the bids for a building, and particularly for a public building, being all based on the same plans and specifications, it is almost always the case that there are considerable variations between them. One bidder will estimate for "everything in the specifications except the brickwork;" another will put a codicil to his bid, to say that "this does not include the heating and ventilation," while we have known a bidder for public work to interline the printed specification which he handed in, signed, as a part of his tender, so as to provide for a much cheaper job than that on which the other bidders had estimated. It was the architect, in this case, who called the attention of the committee to this interlineation, and the architect is generally obliged, after the formal bids are in, to examine and compare them, before it can be determined which bidder really offers to do the work wanted for the lowest price. It is hardly necessary to say that a dishonest architect, by intentional vagueness in the plans or specifications, or by calling for materials controlled by certain persons, or by suitable representations in regard to the result of his comparison of the bids, can easily influence the award in the direction most profitable for him. How profitable a judicious use of one or both these devices may be can be judged from the fact, shown by printed reports some years ago, that, at that time, a school-house in Boston cost twice as much as those of similar character and size in Chicago. We do not wish to suggest that the incumbent of the city architect's office at that time was in fault; in fact, the system then in use was shown to be chiefly responsible for the trouble; but as, in general, building-operations are, at least, as dear in Chicago as in Boston, the lesson conveyed by this circumstance is that school boards, auditors and mayors will, without suspicion, approve contracts and bills for public buildings to an amount twice as great as their proper cost, even when millions of dollars are involved in the expenditure. If, therefore, school boards and auditors will pay without hesitation, on an architect's certificate, two hundred thousand dollars for a building that really costs only one hundred thousand, there is, evidently, a fine margin of profit for somebody; and we hope that our readers begin to understand how "a good living" can be derived, without detection, and without risk, by an unscrupulous architect out of a single public commission. But this is not all. After the specifications have been signed, the contracts made, and the work begun, it is the architect who decides whether it is carried on in accordance with the contract, and he may, in collusion with the contractor, accept work grossly inferior to that contracted for, and certify it for payment at the contract price. In engineering work, under the supervision of rascals, this is the favorite method of cheating one's employers, but it is also practised on a large scale in public buildings, the most expensive portions of the contract work being often replaced by something very inferior. In most cases, the substitution is covered up by subsequent work, so that no one ever knows anything about it except the architect and the contractor with whom he is in collusion; but it is often made in fittings exposed to view, the guilty parties knowing that there is little chance that any one will take the trouble to compare the printed specification with the executed work, and that, if any one should do so, some plausible explanation can probably be given. In either of these three ways, therefore, or by all of them together, by adding a percentage to all the bids; by influencing the award of the contract to a certain bidder who has special views in regard to contract and extra work, or by certifying inferior work at the contract price, the architect of a public building can without difficulty profit enormously, without fear of detection, and without risk of punishment if he should be detected. It is the law that if a man or corporation, municipal or otherwise, chooses to entrust a person with important duties, that person cannot be held responsible for the consequences of errors of judgment, or want of proper knowledge, no matter how gross they may be, or how ruinous to the interests of his employer. So long as direct fraud cannot be proved, which would rarely be the case in such operations under our laws, the only answer that a court would make to the complaints of the employer would be that he should have selected a better man. Just as, in the case of the trustee of an estate, the only way to avoid the plundering and waste of the estate is to select an honest trustee, so in building-operations, the only possible way to prevent the waste and misappropriation of the large sums so employed is to entrust the control of them to an architect known as thoroughly competent and honest; and we hope that the people of New Haven will ponder well the question whether the best way to secure such an adviser is to advertise for the cheapest man that can be found.

THE detailed announcement just issued by Harvard University as to the new course in Landscape Architecture contains some interesting particulars. The general direction of the course will be in the hands of Mr. Frederick Law Olmsted, Jr., who will be assisted by Mr. Arthur A. Shurtleff. It is a satisfaction to learn that the students of landscape architecture will be required to take the second year work in design of the regular architectural course, somewhat modified to suit their special needs. This will give them, what landscape gardeners generally lack, a conception of the value of symmetry and axial arrangement in building, and, we may hope, of the importance, in dealing with a symmetrical building, of a certain formality in the plantation immediately around it. In addition to this study of architectural design, those who devote themselves to landscape architecture must take a part of the fine-arts course, in order to familiarize themselves with the history and development of fine-art in general. Mr. Olmsted says, very truly, that the professional success of a landscape architect depends very much on his ability to understand the various tastes and ideals of his clients, and, while a college education naturally tends to enlarge the views and broaden the sympathies, it is desirable to give particular attention to increasing the resources of men who must try to please a great variety of tastes. It is hardly necessary to say that, with the course in the hands of one brought up in the traditions of the Olmsted office, the materials of landscape gardening, such as flowers, trees and shrubs, are to be thorougly studied, with a view not only to their habits, but to their value and expression in landscape work; and a summer course in surveying completes what seems to be a very well-considered scheme. As we have before said, there is room for doubt whether the profession of landscape gardening will, for a time, furnish employment for all the graduates of the schools which have determined to teach it; but the Doctors of Landscape Architecture, or whatever else they be called, if they find their services for a time not in great demand, will, at least, be of use in guiding the taste of the community in which they live, and the development of the public taste for beautiful adjuncts to houses and other buildings is sure, in the end, to bring employment to those qualified to produce them.

IT is rather a pity that amongst the tests for admission to this course there could not be inserted one that should exclude all applicants who could not prove that they possessed the imaginative faculty, growing and healthy. Landscape architecture should be more of an art than a science, but it can become such only in the hands of men whose imaginative faculty is highly developed by training and observation, men who can correctly picture to themselves the ever-changing effects their work must pass through from year to year under the compulsion of their all-powerful partner, Nature, whose influence may be benign or malign according as she is checked or guided at precisely the right time and in exactly the right way, and these times and ways we fancy must be foreseen and provided for at the outset. We hope that it is the intention to make the engineering training altogether subordinate to the artistic and horticultural. There are in practice to-day too many "surveyors and landscape gardeners," men who have really only an engineering training and think more of grades and levels than they do about form, color, reliefs, vistas and shades; men whose work is stiff and cold; to whom a concrete bridge over a brook or ravine is the one thing needed to give their scheme the *cachet* of the most perfect art; men who would blast away a jutting boulder and would never think of patiently enlarging its natural hollows so as to give place for enough loam to support the climbing vines and flowering shrubs that would transform its ugliness into loveliness; men, in short, in whom the imaginative faculty is non-existent or benumbed by the burden of engineering formulas. We hope that the day of these despoilers of our surroundings is nearly over and that the graduates of Harvard and the Institute of Technology will give us better things.

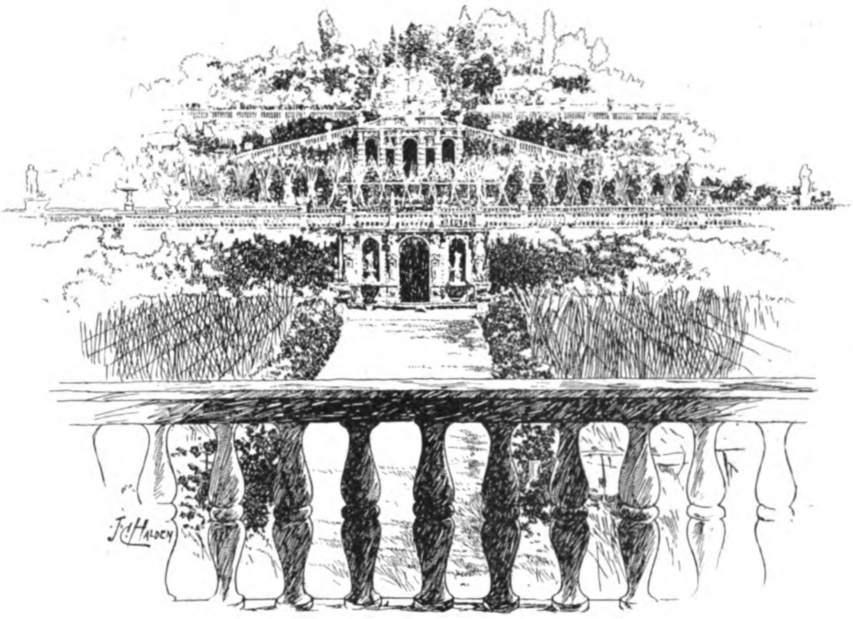
A CANADIAN company has been formed to utilize the Falls of Niagara in the production of power. More than ten years ago the Company was organized, but, prudently, as it seems, waited until the American company had completed its operations, and had ascertained, at a considerable cost, the expense of transmitting force by electric currents. Now, the Canadian company can work with an adequate knowledge of what is required, and what apparatus is available to fulfil the requirements, and operations are to begin at once. Under the present scheme, a canal will be dug from the confluence of the Welland and Niagara Rivers to the edge of the precipice below the Falls. Turbines will be placed at two different points, and it is estimated that nearly two hundred thousand horse-power will be available.

THE ITALIAN GARDEN.[1]—II.

WHEN either the fine view or the abundance of water was wanting, the greater burden came upon the other, and no Italian garden was really perfect without both.

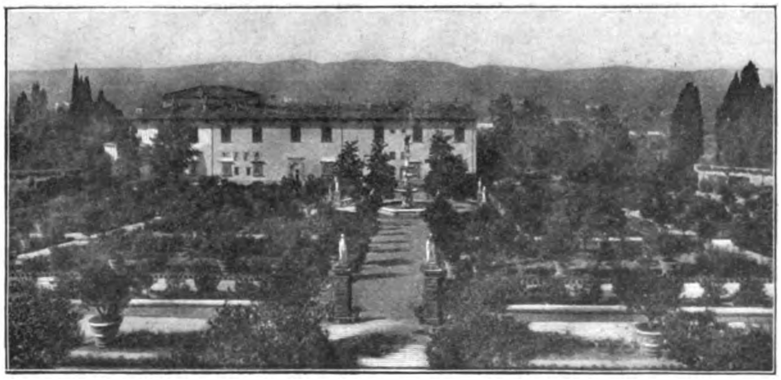
Sometimes, perhaps more commonly about Genoa, the house is at or near the foot of the slope (see Illustrations for plan of the Villa Scassi), from which the terraces rise at the back to higher and higher levels, terminating with the bosket and the reservoir, a feature to the beauty of which special attention was generally given. The higher terraces in this case afford more extended views than the house itself. How this reversal may have come about sometimes, at least in the Genoese gardens, will appear farther on.

The shape of the Italian garden seems to have been usually rectangular, as has since been the case with the French and English gardens, though of course there were instances where the slope of the grounds at the disposal of the architect did not permit this exceeding formality; and still other instances where such a shape seemed not to consist with economy, or best fit the villa scheme of design as a whole.


Garden of the Villa Scassi, Sampierdarena, near Genoa, Italy.

Regarded broadly, the garden nominally consisted of three parts, which, passing from the point of highest elevation to that of the lowest, were respectively the bosket or grove, the terraces, and the parterre proper. Through these three in succession the water was led in various basins of architectural design.[2]

The main axis of the garden, about which were grouped symmetrically the different architectural and horticultural features, was usually (and typically, I should say) perpendicular to the garden façade of the house; or, in other words, it was but the main axis of the house produced exteriorly out to the limits of the enclosure. Sometimes, however, the longer axis of the garden had to be parallel to the façade, or, rarely, even oblique. This difficulty was effectively overcome by continuing the axis of the house, as before, as far as practicable, and then turning it sharply to the necessary angle. In such a case both vistas, that from the house and that from the garden, terminated at this turn, and were there closed either by the same architectural features or by separate ones. An example of such an oblique axis is that of the garden of the Palazzo Nicolini, Via de Serni, Florence, where the outer end of the garden axis is closed by the building called the orangery. Besides the main or longitudinal axis, there was always a transverse axis perpendicular to it and crossing it generally at the great central feature; and parallel to these two axes were a greater or less number of minor axes, intersecting at right angles and forming rectangles whose longitudinal axes might be either parallel or perpendicular to the main axis of the garden. Sometimes there were diagonal axes, the principal ones meeting or intersecting the principal rectangular ones at their intersection of one another. The whole garden-design, the water-system and system of connecting paths, the placing of all the individual features, whether architectural, engineering or horticultural, and their tieing together, was in carefully studied and scrupulous relation to these various axes, so that the whole scheme had compactness and entire unity. Moreover, since the architectural lines of the plan were all straight or segmental (usually quarter, half or whole circumferences), the scheme was absolutely geometric, as it was also symmetric and formal.


Lower Part of the Garden, Royal Villa, at Castello, near Florence, Italy.

As it was the water-system which afforded the motive for the principal features of the garden, the most important fountains and water-basins, etc., were generally along this main axis. Around these the lesser water-features were subordinately grouped in relation to this and the other axes. The flow of water from one basin to another and another by tieing them all together was perhaps the chief factor in giving to the Italian garden its characteristic organic unity. The starting-point of the water-supply, at least so far as the garden was concerned, was the great reservoir, already referred to, in the bosket. This reservoir, like most of the features of the Italian garden, varied very much in design. It was either circular, rectangular or otherwise polygonal, or outlined by a symmetrical combination of straight and segmental lines. One such form afforded right-angled re-entrants, which served as pleasant standpoints for enjoying both the beauties of the water and the movements of the fish with which the basins were commonly stocked. This reservoir was surrounded usually by a balustrade, but sometimes merely by a wall with a more or less moulded coping. Along the top of this balustrade or wall, placed at regular intervals, might be a series of statues, urns, obeliskoid monoliths, or almost any other form of sculptural ornament[3] which took the fancy of the designer or the owner, as, for instance, a series of great pine-cones. Sometimes, instead of such purely architectural features, a series of decorative pots with ornamental plants was employed. In the centre of the basin was a fountain, to the beautiful designing of which especial attention was given. Paths led to and from this basin and sometimes radiated from it in half a dozen or more directions through the bosket.

While this bosket would never have been taken for a wild, unordered forest, it was, nevertheless, made perhaps the most naturalistic feature of the whole grounds. It was often left dense, particularly immediately about the basin, and its formalism was no more than was needed to consist with the more or less conscious simulation of the classic grove. In the most beautiful examples the trees were allowed to grow close to the water-basin, so that much of their beauty of form and color might be reproduced in reflection from the mirror-like surface of this miniature woodland-lake,[4] thus more closely relating, and blending with admirable effectiveness, the beauties of Nature with those of Art, while at the same time the simple, placid surface of the water itself rested the eye from the confusion of the surrounding vegetation. Immediately outside the balustrade was generally a paved walk, or even a continuous stone platform, beyond which again was the path, and often on the farther side of this, stone seats of architectural design known as "exedra." This grove and its little lake must, it would seem, have been in every way the most restful in its effect of all the different parts of the garden.

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[1] Continued from No. 1259, page 45.

[2] For an interesting and charming poetic description of an Italian garden, see Leigh Hunt's "*The Story of Rimini.*" Canto III.

[3] See the Garden of the Caryatides in the *American Architect* for April 8, 1899.

[4] See the *American Architect* for August 12, 1897.

Villa Lante, Detail of Stairs: Swan Fountain.

From this reservoir the water was led — in places below ground by aqueducts, but for the most of its course above ground, in full view — down over the successive terraces and out over the parterre. In its passage over the terraces it appeared as cascades or waterfalls, according to the steepness of the slope, or was conducted through caves or grottos, or rockeries sunk in the bank-walls of the terraces, whence, after collecting from innumerable small jets, and being gathered again into larger and larger pools, it was led on till it reached the parterre, or great level expanse which spread out at the foot of the terraces. There, at different points, as at various parts of its upper course, the charming channels in which it was confined expanded into basins, with central fountains and enclosing balustrades, repeating the general character of the first basin in the bosket, but without its thick, embracing woods, and always ringing changes on the old theme. Where the basins were exposed to the direct rays of the noonday sun, little caves and grottos were provided under the parapet of the fountain into which the fish could dart for refuge in the heat of the day. Sometimes, as in the Boboli, swans floated proudly over the water-surface. Occasionally, when the basin was of considerable size, it was given an island, connected with the bank by bridges. Such is the Isola Bella, in the Boboli.[1] Bridges were also elsewhere used to span the water-channel, and, wherever placed, were utilized as opportunities for artistic treatment. The exceeding variety of the fountains included in some cases old sarcophagi, the remains of ancient times, dug up and altered over for their new purpose!

Villa Torlonia, Frascati: Upper Basin.

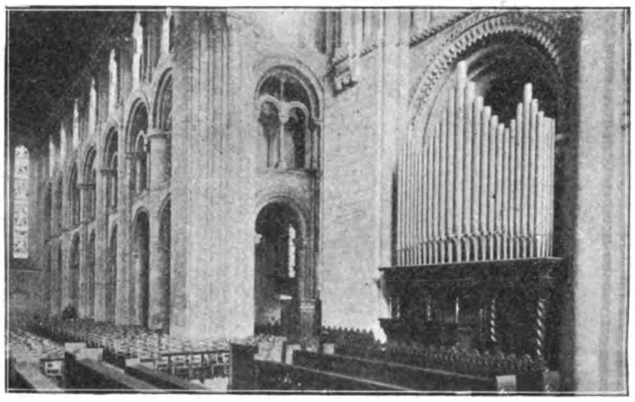
J. S. PRAY.

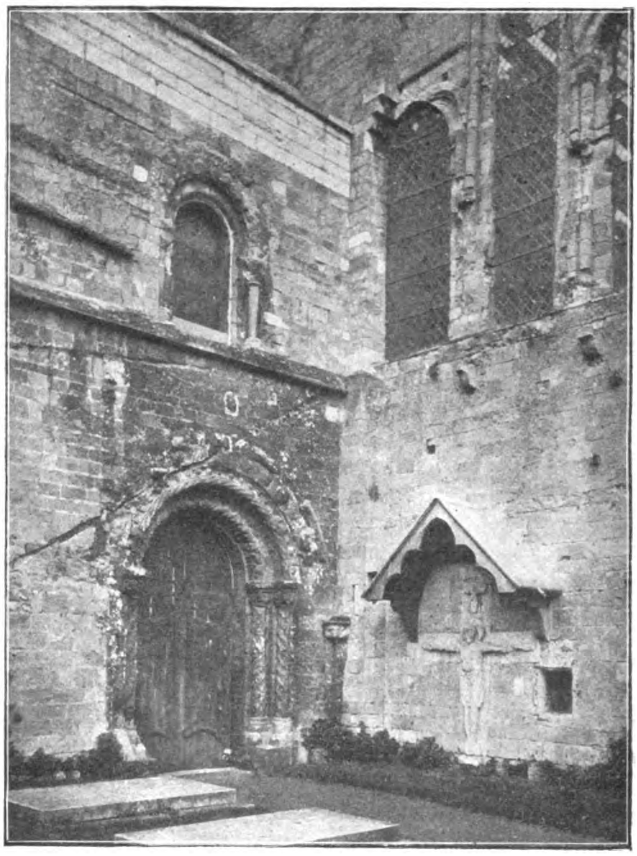
[To be continued.]

ROMSEY ABBEY.

THE beautiful abbey church of Saint Mary and Saint Æthelfræda was commenced by Abbess Hadewis about 1120, some years subsequently to Durham Cathedral (1093), and Christchurch Priory, both of which are severer in style in some parts, as for instance, the triforium arches, which at Romsey are light, open and interlaced.

The abbey was founded by King Alfred's son, Edward the Elder (who began to reign about 900), when he began to restore the churches and monasteries destroyed by the Danes. "All the monasteries," said the king, "to the outward sight are nothing but worm-eaten and rotten lumber and boards; and that worse is, they are almost empty and devoid of divine service." Romesyg is mentioned in Doomsday Book, and Roman coins have been found there; but whether it derives its name from *Romana Insula* or *Rumesige* (Anglo-Saxon)— the Broad Island: hence the late Lord Palmerston's estate of Broadlands — is a matter for antiquarians and archæologists.


Choir from the East: Romsey Abbey.


Nuns' Door and Crucifix: Romsey Abbey.

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[1] See the *American Architect* for April 28, 1897.

No. 1260. American Architect and Building News, Feb. 17 1900.

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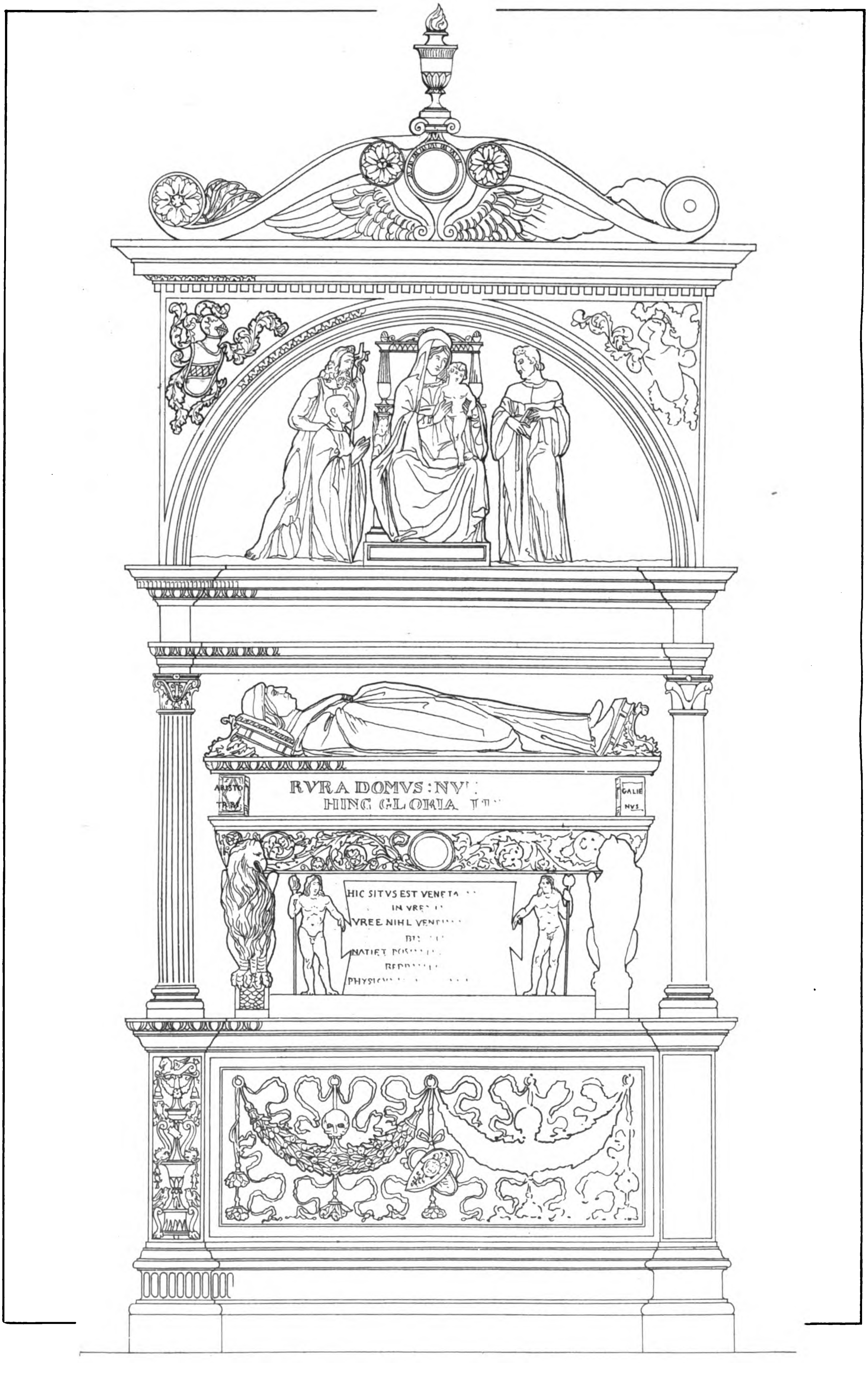

TOMB OF JACOPO SURIANO, IN S. STEFANO, VENICE.

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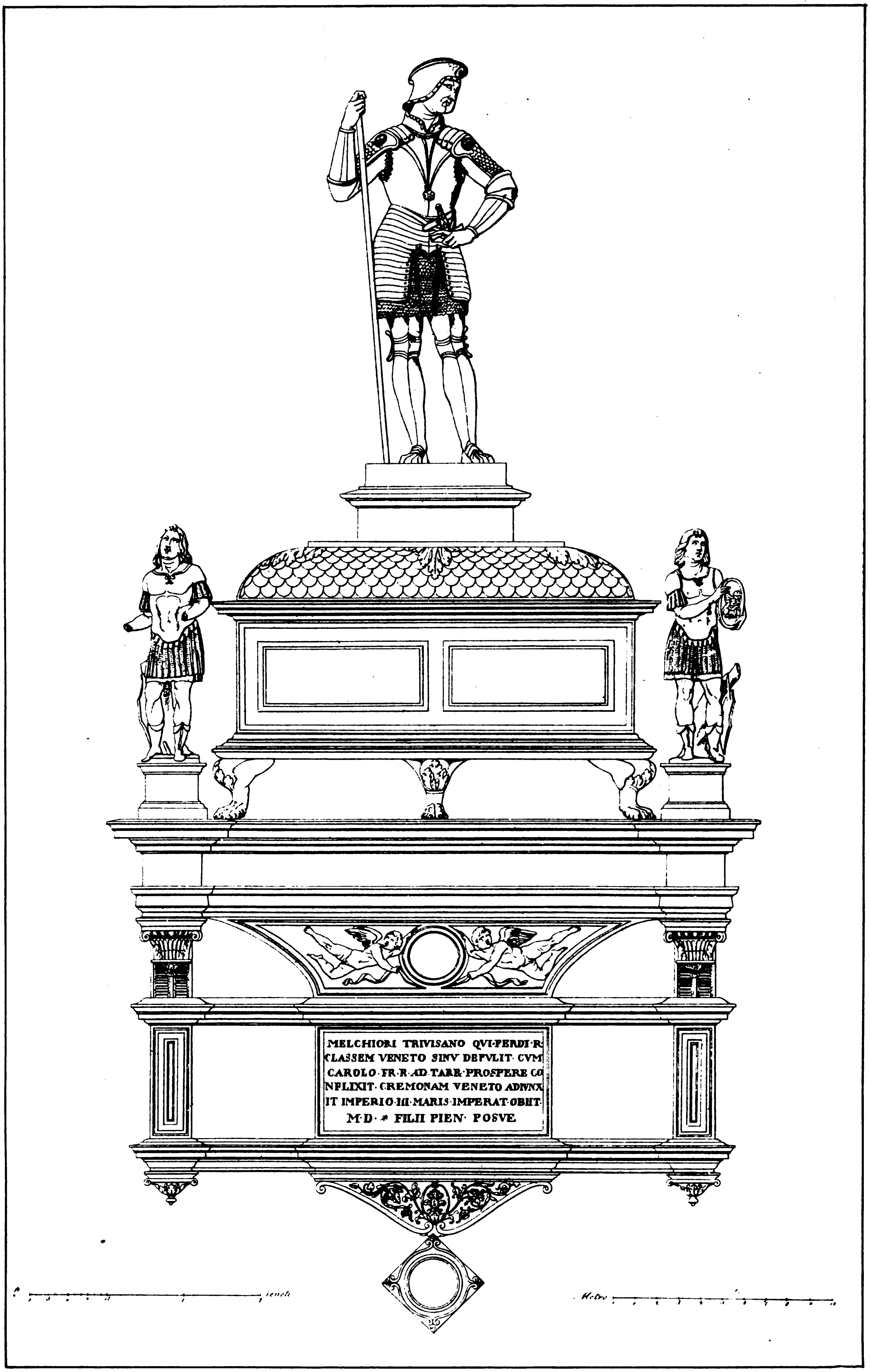
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MONUMENT TO MELCHIORRE TREVISAN, IN STA. MARIA GLORIOSA DEI FRARI, VENICE.

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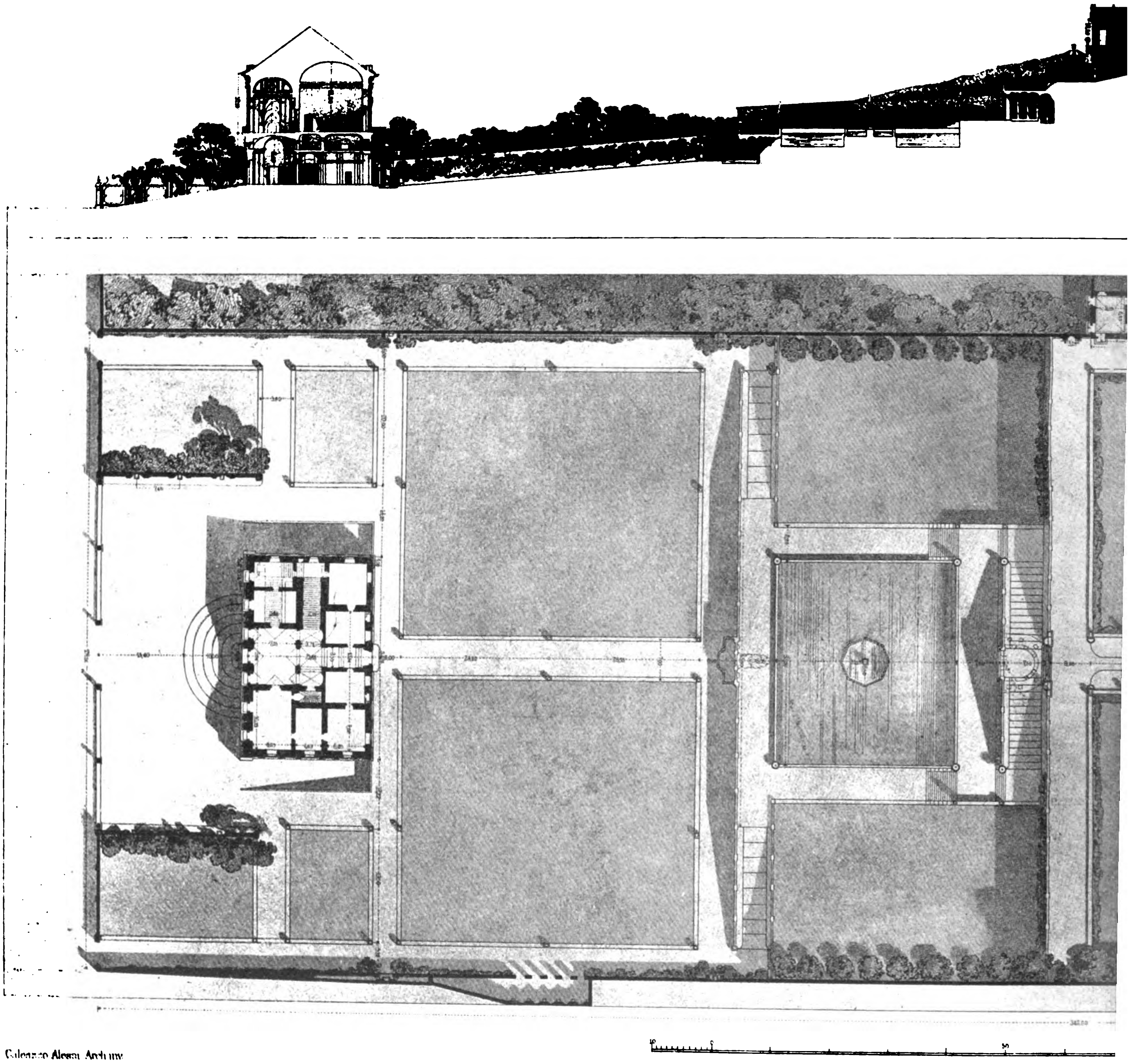

Galeazzo Alessi Arch inv.

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THE VILLA SCASSI, SAMPIE

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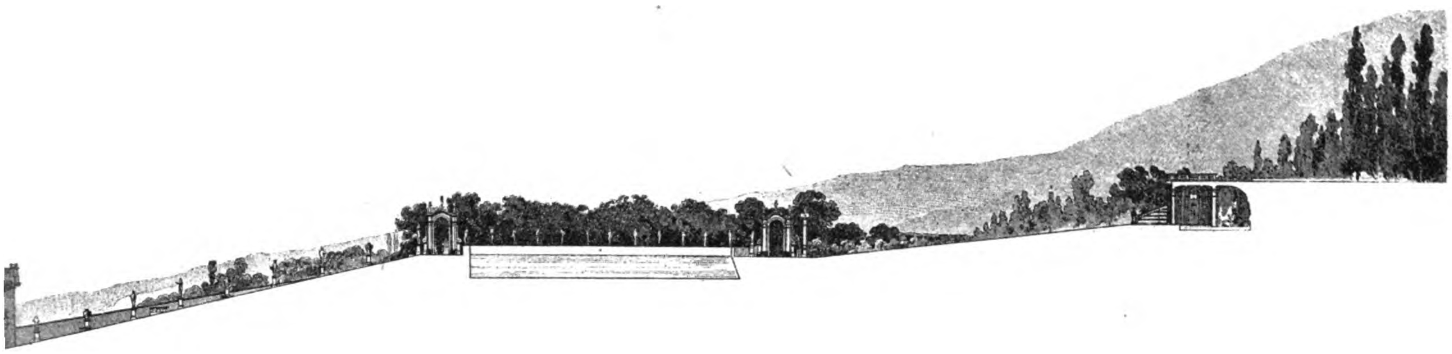

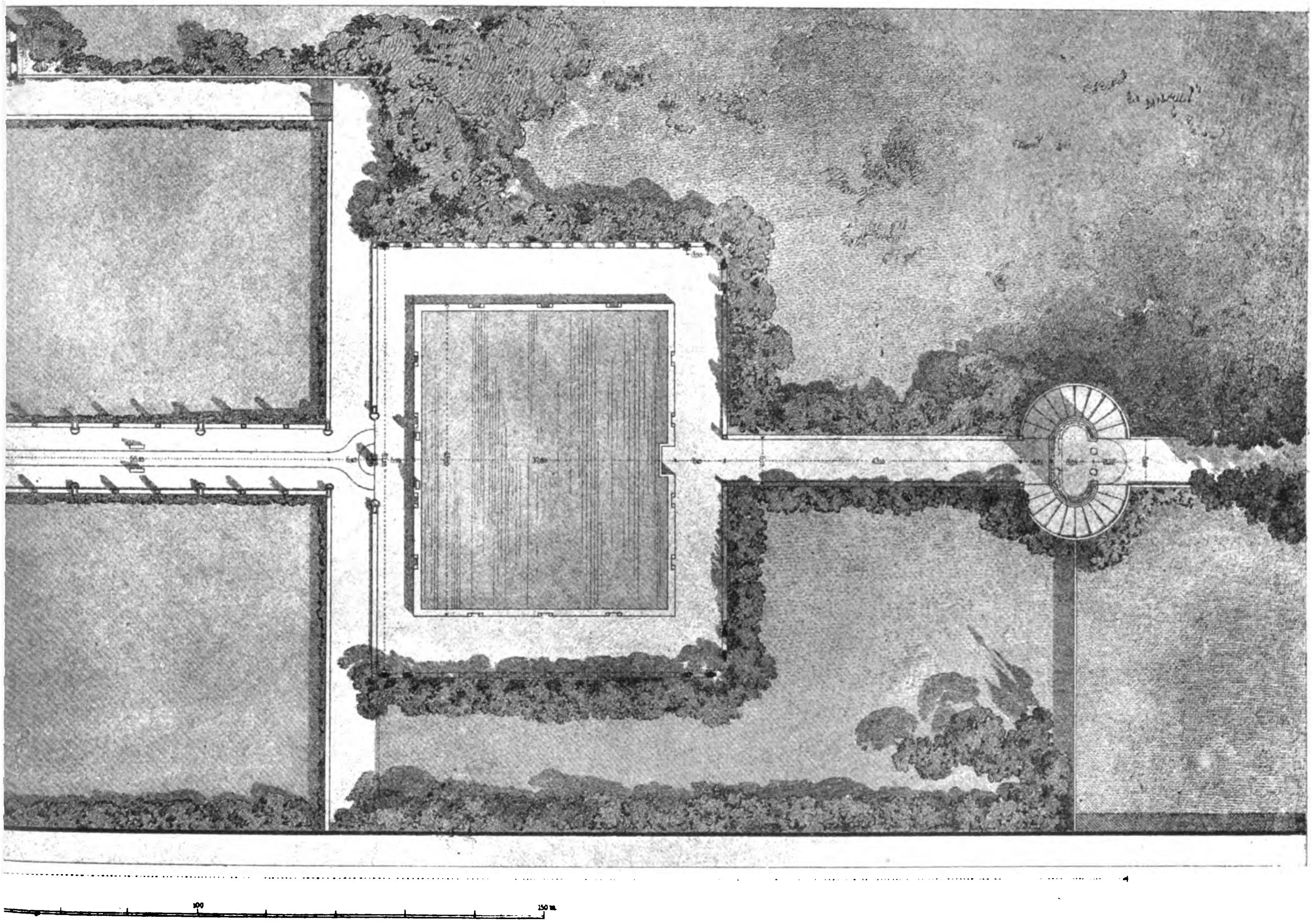

Gustav I Geyer

ıd Gartenplan

DARENA, NEAR GENOA, ITALY.

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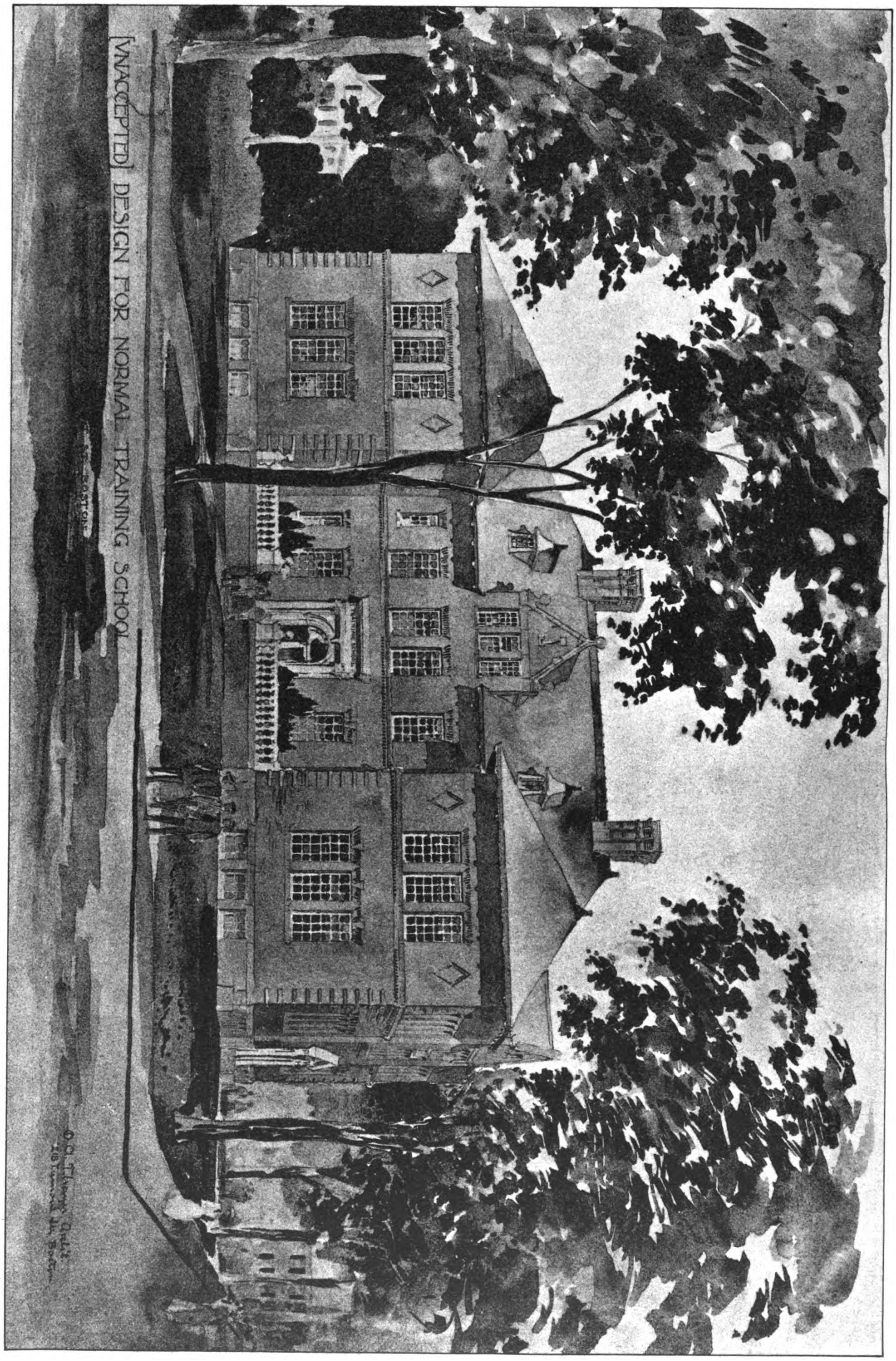

UNACCEPTED DESIGN FOR NORMAL TRAINING SCHOOL

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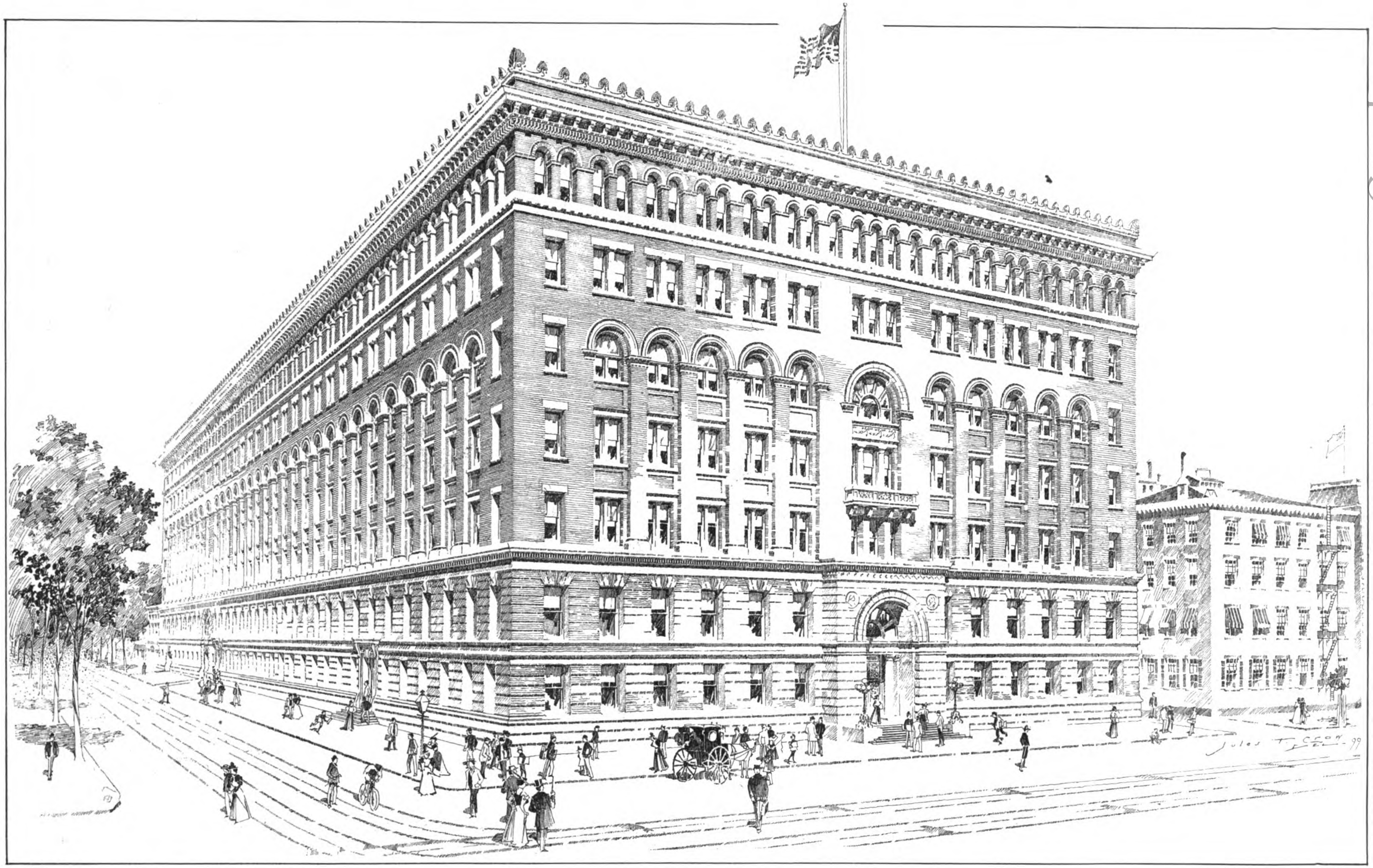


NEW BUILDING FOR GOVERNMENT PRINTING OFFICE.

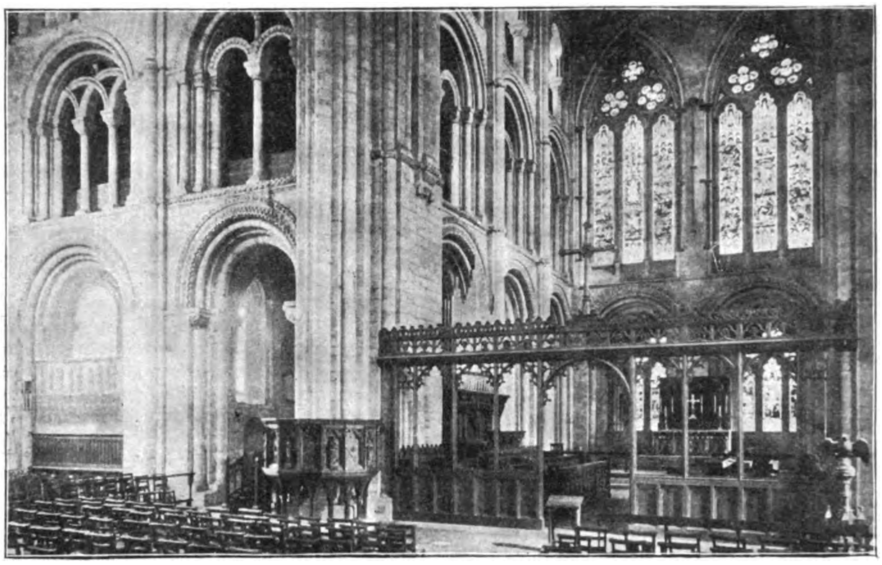
J. G. HILL, ARCHITECT.

HELIOTYPE PRINTING CO., BOSTON

It is still all but surrounded by the River Test and its tributaries, which wander through delightful meadows, green and full of wild-flowers, the happy hunting-grounds of numerous herds of cattle.

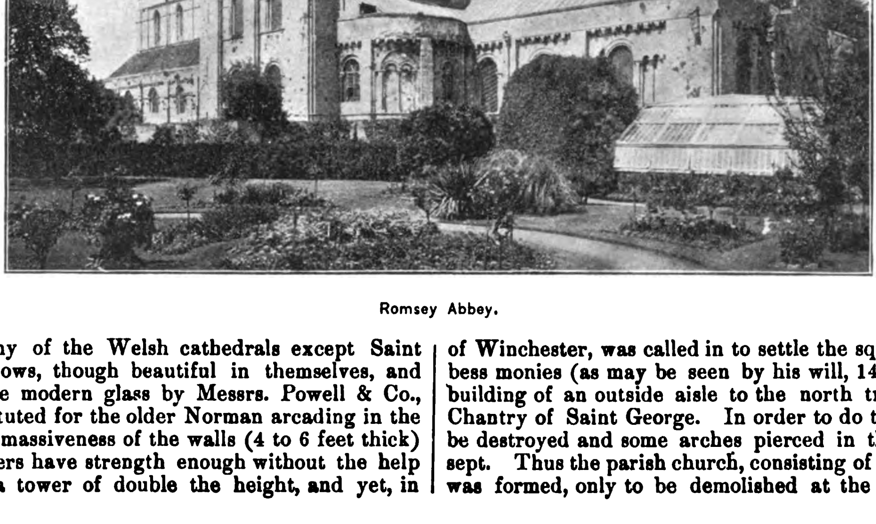
Some five miles from Romsey was another famous monastery, Nutcel (now Nursling), a school and training-college for missionaries, from whence Saint Boniface was sent as apostle to the Germans in 710.

In the early days the abbey was a school for the daughters of the wealthy and a retreat for the unhappy. Such was Christina, cousin of Edward the Confessor, who took the veil in 1086. As Robert of Gloucester puts it: "Edgar Athelyng, that rygt eyr" (right heir) "made his yonge sister nunne of Romseye." After all, what better career for a good or a strong-minded and intellectual woman could be found in those semi-barbarous times? The conventual life was vastly superior and freer than that of the wives who were locked up in towers during their lord's absence or pleasure. Nor was the monastery a bad school; for we know that "Molde, the gode quene," was brought up there and educated by Abbess Christina. Maud was the daughter of Malcolm and of Margaret of Scotland, and was wooed by Henry I; but she seems to have liked conventual life, free of vows, better than the idea of a throne, for she retired to the Abbey of Saint Mary Winchester after leaving school at Romsey. Maud was married at Westminster and buried at Winchester. May it have been as a thank-offering that the abbey was rebuilt in 1120 to commemorate the marriage of Henry and Maud?



The Chancel: Romsey Abbey.

Two remarkable very early crucifixes are still intact. The one in the south chancel aisle had been built into the wall, face inwards, until quite recently; the other stands on the wall which formerly bounded the cloister to the east, and covered the nun's beautiful porch. On the wall above the figure may be seen corbels from which the roof of the cloister started. The figure is unlike later crucifixes, being erect and clothed,— not the dead but the living Christ. The eyes are open, and above is the hand of the Eternal Father issuing from a cloud and giving the blessing. A drawing of a similar design may be seen in the homilies of Archbishop Ælfric in the British Museum manuscript, so that we may consider the Romsey carving to be, most probably, of the date of the earlier church, which was destroyed in 994 by the Danes, when the abbess, having heard what was coming from Saint Æthelfreda in a vision, gathered together her nuns and valuables and fled to Winchester. This event is the subject of a fragment of wall-painting of very early character, which is almost obliterated. The square space in the wall by the crucifix is conjectured to have been a receptacle for a light, as the holes above suggest apertures for the smoke to pass away.



Romsey Abbey.

The dimensions of the church are: 275 feet long, 131 feet wide at the transepts, and 74 across the nave. It is larger than Oxford, Carlisle, Rochester, Chester or any of the Welsh cathedrals except Saint David's. The east windows, though beautiful in themselves, and filled with most exquisite modern glass by Messrs. Powell & Co., were unfortunately substituted for the older Norman arcading in the thirteenth century. The massiveness of the walls (4 to 6 feet thick) and the solidity of the piers have strength enough without the help of buttresses to support a tower of double the height, and yet, in spite of this strength, there is nothing of the clumsiness of the Norman work at Gloucester and, in a lesser degree, in parts of Norwich and Durham Cathedrals. The height of the triforium, with its beautiful, slender shafts and interlaced arches, is a special and unique feature. These were at one time plastered up, either to save expense or as a preservative from draughts.

The clerestory is interesting as showing the gradual transition during probably one hundred years or more from pure Norman to Early English. The mouldings of the arches are mostly carved with the chevron, billet, dog-tooth or egg-and-dart ornament, and here and there, notably upon the outside of the abbess's door, are some unusual specimens of ornament. In the ambulatory some of the capitals are Romanesque in character. In one of the chantries, both now unfortunately turned into vestries, there are two piscinas upon different elevations, showing that, whereas in Norman times the altar was level with the ground, in the Early English period it became raised. Like many of the smaller churches in the neighborhood, the abbey possesses its original stone altar-slab, but it probably stood where the choir-screen is now placed, the rood-screen most likely having been originally across the nave. The greater part of the present screen is modern, but the old parts date back to the fourteenth century, having been constructed to cut off the north transept for use as a parish church — a church within a church. Later on, the screen was used to support the organ, and was then covered with a coat of paint. This gallery was taken down some fifty years ago, the base was destroyed, and the rest thrust away into the triforium gallery. It originally had triangular openings in the lower part, to act as confessionals.

The chancel aisles are peculiar in having square terminations on the exterior, while the interior is apsidal.

The nun's porch mentioned above is formed of a series of rich mouldings supported upon twisted columns with grotesque capitals. The soffit of the arch is also covered with four-leaved roses in a lozenge form. It has all the rich character of the porch at Iffley, Oxford.

Passing into the church by this porch, an interesting canopied tomb may be seen in the south transept. Angels, much mutilated, support the canopy, and in the arched recess at each end is a female figure. It has been attributed to the Abbess Mary, but the date is too late, and the figure possesses no attributes, regal or abbatial.

The use of the north transept as the parish church of Saint Laurence seems to have been anterior to the year 1333, as we find the abbess in that year endowing a vicarage for the people of Romsey. The town had increased, and the congregation had grown so large that upon high festivals the people overflowed into the church; hence disputes and troubles, and William of Wykeham, Bishop of Winchester, was called in to settle the squabbles. He lent the abbess monies (as may be seen by his will, 1404), and he advised the building of an outside aisle to the north transept, to be called the Chantry of Saint George. In order to do this, a large porch had to be destroyed and some arches pierced in the west wall of the transept. Thus the parish church, consisting of a chancel and two aisles, was formed, only to be demolished at the Reformation, when the windows of the exterior aisle were brought in to fill up the arches which had been pierced; and, latterly, these same Perpendicular windows have given place to modern Norman ones, and have been deposited in the vicarage garden! This desire to restore the church to its original style has also led to the banishment of several sixteenth and seventeenth century monuments and slabs from their original places in the nave to the improvised vestry. The ancient font has quite disappeared, but some curious relics of the past remain. In a glass case is an embroidered cope which had been used as an altar-cloth until rescued from decay by the daughter of the late vicar. Near by is a panel which probably formed part of the roof of Saint George's Chantry, painted. There are several altar-slabs and stone coffins, probably those of the abbesses, and a very curious pair of ancient cressets, or lamps. But a head of auburn hair under glass excites the most attention in the ordinary visitor. This was found during some excavating near the abbess's door, in a very much corroded leaden coffin which projected from beneath the foundations of one of the great piers. Its position was unusual, being north and south, and its length only five feet. The hair was gathered in a plait eighteen inches long, and rested upon a block of wood, forming a pillow. Could it have been the remains of a young girl who died at the abbey during her schooling? Or was it a subsequent burial after the suppression of the convent?

The painted panels, which probably formed part of the original reredos of the high-altar, were found at the back of the altar at the beginning of this century, with the Lord's Prayer and Ten Commandments panelling nailed in front of it. It has been roughly repainted and is partly gilt. The subject is the Resurrection, with the abbess-donor in the left-hand cornor. Above this are a bishop, Saint Anthony, with the Devil at his feet, Saint Roch, Saint Benedict, Saint Scholastica, another bishop, Saint Sebastian, Saint Francis of Assisi and Saint Clara, and a cardinal, St. Jerome possibly. Most of these saints were either Benedictines or were in some way connected with the introduction of the order into England, and therefore selected by the Abbey of Romsey, which was under that rule.

The only remains of the nunnery is the refectory on the south side of the church, and now converted into two dwelling-houses.

One of the most beautiful features of the exterior is the corbel-table, which runs all round the church above the windows. The corbels represent the projecting ends of roof-beams, and are carved into heads of every kind of animal, natural and fantastic. On the north side are the remains of holes made by cannon-balls during a skirmish between the Royalists and Parliamentarians in 1642, concerning which there are several entries in the parish registers. Some of the Saxon kings are said to have been buried at Romsey, but with no memorials remaining; but in 1845 the skeleton of a priest with some remains of vestments, and bearing a pewter chalice and paten in his hands, was found in a stone coffin. S. Beale.

TRADE-UNION CONDITIONS IN CHICAGO.

W. F. BEHEL, Chairman of the Executive Committee of the Building Contractors' Council, has issued the following statement to the public in regard to his organization's differences with the Building Trades' Council: —

Comprehension of the present critical situation in the building industry of Chicago lies in the definition of the "union conditions" referred to in the communication of the Building Trades' Council to the public, printed in the newspapers recently.

This communication says: "We, the Building Trades' Council, are willing to furnish our services to whomsoever needs them in the erection and construction of buildings, irrespective of whether they are members of contractors' associations or not, the only stipulation being that union conditions shall prevail on the building."

The public who are so largely concerned in this matter has the right to know what is meant by the phrase "union conditions," so that it may intelligently judge of the issues at stake. One of these "union conditions" refers to the limitation of the work a man is permitted to perform in a day. The lathers, steam-fitters and plumbers place these limitations upon members of their unions. In the plumbers' trade, for example, a man may do only one-half and in some instances one-third of what he is capable of performing. He is only allowed to set one fixture a day, of a sort where three is within the capacity of an ordinary workman.

Another "union condition" is the delay caused by the quarrels between unions as to which shall perform a specified piece of work. In the process of erecting the new Marshall Field Building it was found that one inch had to be cut off the granite of the north pier. The Chicago Soft-stone Cutters insisted that the work of doing this belonged to them. The Granite Union, on the other hand, claimed it was theirs, and threatened that if any but one of their union cut the granite they would call a strike at the quarries from whence the granite was shipped. The soft-stone cutters stated that if any but their members performed the work they would call off every man on the building. The completion of this work was delayed three weeks and was finally settled by each of the contending unions cutting half an inch! In the same building a number of iron window-mullions were set in place by the Ornamental Iron-workers, but the members of the Structural Iron-workers said that this work was their rightful prerogative. After a delay of a week, during which all work on the mullions was stopped, it was finally decided that the work should be done by the Structural Iron-workers. All the mullions which were already placed were then taken down by the Ornamental Iron-workers, laid on the floor and the ropes with which they had been handled removed. The mullions were then set in place the second time by the Structural Iron-workers. Who paid for these delays? The owner. Who paid for the double work? The contractor. For what did the two unions who caused the trouble pay? Nothing.

Another of the "union conditions" referred to in this communication is that the union shall dictate to the contractor how many men he shall employ on a specified building, and that he shall not discharge a man to whom they wish to give work, even if he is lazy or an incompetent workman. In the Chicago Telephone Company's new building the contractor for the plastering was forced by the business-agent of the Plasterers' Union, under threat of having his men ordered out, to put on six more men than he needed. One man whom he discharged for incompetency he was forced under the same threat to reinstate. Who paid these seven parasites?

A fourth of these "union conditions" is that the union shall dictate to the investor where he shall buy his building materials and by whom they shall be finished. In the Montgomery-Ward Building the exterior marble-work was cut out of the city by union men, working union hours, and for union wages. Yet the Soft-stone Cutters attempted to prevent the work from being set. It was permitted to proceed only after a compromise had been effected between the general contractors and the Soft-stone Cutters, requiring that a portion of the cutting be done in Chicago. Who paid the tariff in this case?

The overcrowding of our public schools has brought a great pressure for the completion of new school-buildings, yet three of these school-buildings have been incomplete for four months and still are at a standstill. Why? Because in one the boiler was made by men who did not care to belong to a union. In another a concrete floor was laid by non-union men, and in a third a compression-tank was made by men outside of a union. With the exception of these small particulars the work on these three buildings was done by union labor. Before the first step can be taken toward their completion the tank and boiler mentioned will have to be removed and the concrete floor torn up. In the meantime the children who would attend these schools are forced into damp and unsanitary quarters. Who pays for this loss of time and material, and also let us ask who is to blame for the injury to those boys and girls?

It is a "union condition" that industry is to be blocked by the prohibition of machinery, as in the case of the stone-cutters who have shut down all the planers in Chicago, and the carpenters, who will not allow a patent miter-box to be used.

It is a "union condition" that in many unions the growing youth is not permitted to learn a trade. In the plumbers' and tile-setters', for example, by the prohibition of apprentices, a father is not allowed to teach his trade to his own son. The unparalleled power of the walking-delegate armed with the sympathetic strike constitutes another "union condition." This irresponsible individual, because of some fancied grievance, may step in at any time and stop the activity on a whole building, the non-completion of which costs thousands of dollars. During process of construction the Edison Building has had twenty strikes. These are some of the "union conditions" under which the Building Trades' Council so magnanimously offers the services of its members.

The communication further states that it is the aim of the contractors that the unions shall only work for the members of the employers' association. This is not a fact. A proposition was made by the committee representing the Building Trades' Council to the committee representing the Building Contractors' Council in the conferences held during December last that the unions should only work for employers belonging to the Contractors' Association. The proposition was rejected by the Building Contractors' Committee.

The Building Contractors' Council stands for free trade in all manufactured material, except prison-made. The restrictions placed on certain building-materials, mentioned in Section 6 of the agreement entered into between the committees of the two Councils, were insisted upon by the committee representing the Building Trades' Council, and were only agreed to by the Building Contractors' Council committee when the latter saw that unless they were granted it would be impossible to arrive at any agreement.

Mr. Grant and his committee state that they mean to carry out the agreements entered into by their unions in good faith. Does he refer to the two-year agreement made by the plumbers last spring with the employers' association, limiting the wages to be paid to $4 per day, and which was later evaded by cutting a man's daily limit of production 50 per cent, thus making his wages $8 per day instead of $4?

The contractors have taken their present stand because no other course was open to them. They have no alternative but to hold solidly together until the good sense and the good citizenship of the rank and file of organized labor rises above the standards and methods of the Building Trades' Council. In this their effort, made for the welfare of the city, as well as in self-defense, they ask the moral support of the people and press of Chicago. — *Times-Herald, Chicago, February* 11.

Perhaps an Early Female Architect. — While women are only now being admitted to German universities, the doctor's degree was conferred on a young woman named Dorothea von Schlözer as early as 1787, at Göttingen, after an examination in Latin, architecture, mining and algebra. — *N. Y. Evening Post.*

RUSKIN AND VENICE.

THE Municipal Council of Venice, besides voting a message of condolence to the late Mr. Ruskin's family, have resolved to place a memorial tablet upon the house which he occupied in the "silent city in the sea," while preparing himself to write "*The Stones of Venice.*" If ever a community had reason to be grateful to a benefactor it is surely that which dwells beneath the pearly skies of the Venetian lagoons. The splendid harvest which it reaps every year from thousands of English and American tourists is traceable directly to the vogue established by the great English critic. It is true that not all the Anglo-Saxon visitors are familiar or even acquainted with the swinging march of the easy prose in which he glorifies the great act of faith that made St. Mark's, and shows how every inch of it — stone and fresco and mosaic — illustrates "the scrolls which teach men to live and die"; yet Ruskin is the original cause of their presence beneath the shadow of its white dome. Venice, no doubt, had her prophets before him — Byron and Rogers, Canaletto and Turner. Ruskin has himself told us that his Venice had been in great part created for him by Turner, who had received its traditions from the author of "*The Bridge of Sighs.*" But even in those days the city was comparatively inaccessible. The diligence of the first half of the century was an even sorer trial to the flesh than the travelling-carriage or the post-chaise was to the pocket, and it was left to the railway to accomplish what neither the tints of Turner nor the verses of Byron had been able to effect. Since it has become possible to travel to Venice and back for a few pounds it has been overrun with tourists, who have done much to make it busy and prosperous — something also to spoil and vulgarize it. Great ocean-liners call there; fussy little steamers pant up and down the broader waterways, further blackening the dingy marble palaces, and the traffic on the Malamocco is such that its waters are often as turbid as those of the Thames.

Cheap modern shops and howling newsboys go some way toward the disillusionment of the visitor who arrives with his head full of poetry and the Council of Ten, dreaming of Marino Faliero and the escape of Casanova. Yet it would be unwise to laud too highly the silence and repose, the dignified consciousness of history, which sat upon Venice when Ruskin first saw it — which, indeed, it retained until well into the sixties. The grand city which had been a motherland of the empire wore mourning because she was under the heel of the conqueror, and from lack of political hope came commercial decay. A great town must either live or die, and Venice, with her glorious past, her far-stretching memories of dominion beyond the sea, her wonderful sense of art, her architectural triumphs coming down from Byzantine times through Gothic to the Renaissance, was dying. She was becoming a mere museum, like Bruges, once her rival, a fallen power, with grass-grown streets, and canals upon which an oar rarely splashed. It is unluckily true that the commercial and manufacturing Venice of to-day has sometimes been a trifle too much inclined to value the things of the market-place to the despite of those matters upon which her fame still rests. One man has, before now, created a Sheffield; but we shall never again see that peculiar combination of political insight, maritime power, geographical situation and love of art that created Venice, and enabled her to despoil the decaying Byzantine world of treasures which are still the delight of all who can appreciate gorgeous color.

It would be idle, of course, to deny that even when she had about her many of her now legendary glories Venice did not appeal to every mind or impress every eye. She failed to move Sir Philip Sidney to enthusiasm; John Evelyn went into no Ruskinian raptures. Other travellers, new and old, have found the Grand Canal muddy, and the black gondolas funereal. The truth is that Venice is one of those places that need to be lived in to be loved and understood. Utterly unlike every other European city (for Amsterdam, after all, resembles it only in the number of its canals), it has charms impossible for the hasty visitor to seize — skies of pearl and opal, gray waters touched sometimes with a rosy flush, marbles varying from dazzling white to dull opaque hues that might not be out of place in London. In rain, in storm, in sunshine there is always something new in the aspect of Venice, some variation of the point-of-view, some mysterious link between the sympathetic observer and the dazzling, elusive, tantalizing city which holds him in a spell realized and enjoyed but never successfully analyzed.

SOCIETIES.

WASHINGTON ARCHITECTURAL CLUB.

THE Washington Architectural Club's programme for its regular meeting of February 3d consisted of a visit to the "Halls of the Ancients." An address was made by Franklin W. Smith, Esq., the Curator, who is putting unflagging enthusiasm into the great undertaking of establishing "National Galleries of History and Art."

The added interest in and better appreciation of architecture which would be awakened in the public mind by such an institution as Mr. Smith contemplates, and of which the present "Halls of the Ancients" is but a forerunner, leads him to seek the support of the architectural fraternity.

After the meeting, the club adjourned to an informal dinner.

LOUIS A. SIMON, *Secretary.*

THE ILLUSTRATIONS

[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

NEW BUILDING FOR THE GOVERNMENT PRINTING-OFFICE, WASHINGTON, D. C. MR. JAMES G. HILL, ARCHITECT, WASHINGTON, D. C.

THE erection of the building is by Act of Congress in the hands of the Chief of Engineers, United States Army, and the Public Printer, and the general plans and construction-drawings are being prepared by Lieut. John Stephen Sewell, of the Engineer's Corps, who has been placed in charge of the work.

The work of designing and preparation of all drawings for the exterior and all portions of the interior calling for architectural treatment, such as entrance-halls, staircases and finished offices, has been placed in the hands of Mr. James G. Hill, ex-Supervising Architect.

The problem presented was a repeated unit of horizontal spacing approximating 12 feet, and a repeated vertical division of 16 feet (floor to floor).

Building is 175 feet on North Capitol Street, 408 feet on G Street. Appropriation, $2,000,000.

A DESIGN FOR THE NORMAL TRAINING-SCHOOL, BOSTON, MASS. MR. O. A. THAYER, ARCHITECT, BOSTON, MASS.

As stated on the drawing this design was not accepted for execution.

PLAN AND SECTION OF THE VILLA SCASSI, SAMPIERDARENA, NEAR FLORENCE, ITALY.

SEE article on "Italian Gardens," elsewhere in this issue for reference to this plate, which is copied from Reinhardt's "*Palast Architektur von Ober-Italien und Toscana.*"

TOMB OF JACOPO SURIANO, IN SAN STEFANO, VENICE, ITALY.

MONUMENT OF MELCHIORRE TREVISAN, IN STA. MARIA GLORIOSA DEI FRARI, VENICE, ITALY.

THIS plate is copied from Cicognara's "*Le Fabbriche e i Monumenti conspicui di Venezia.*"

[The following named illustration may be found by reference to our advertising pages.]

THE NEW YORK "BOX-STOOP,"—VIII: NO. 933 FIFTH AVE., NEW YORK, N. Y.

[Additional Illustrations in the International Edition.]

HOUSE OF LOUIS STERN, ESQ., 993 FIFTH AVE., NEW YORK, N. Y. MESSRS. SCHICKEL & DITMARS, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print.]

ENTRANCE TO THE SAME.

[Gelatine Print.]

INTERIOR OF ST. MICHAEL'S CHURCH, MUNICH, BAVARIA.

[Gelatine Print.]

ADDITIONS TO WAREHOUSEMEN AND DRAPERS' SCHOOLS, PURLEY, ENG. MR. J. KINGWELL COLE, ARCHITECT.

STAIRCASE OF THE SAME.

THE CLOISTER OF THE SAME.

THE CLOISTER GATEWAY OF THE SAME.

NOTES AND CLIPPINGS

NEW YORK TUNNEL AND BRIDGE PLANS. — The New York *Evening Post* gives the following useful tabular view of the numerous transit schemes, in the shape of bridge and tunnel plans, with which the city is now lavishly supplied. For the sake of completeness the list contains some schemes at present very quiet, and possibly moribund. The actual present state of each plan is given as definitely as possible.

BRIDGES.

Peck Slip Bridge. — To Brooklyn, near Broadway. Authorized by Municipal Assembly; $1,000,000 appropriated for beginning work.

Delancey Street Bridge. — From Grant Street, Manhattan, to Broadway, Williamsburg. Building by the city. Piers about two-thirds completed.

Blackwell's Island Bridge. — From Manhattan, across Blackwell's Island, to Long Island City; $1,000,000 appropriated by Municipal Assembly. No general authority to build.

Rainey Bridge. — Franchise from State. To connect Manhattan, over Blackwell's Island, to Long Island City. Private. Piers partly built. Franchise expires in March, 1900.

Lauterbach Bridge. — Franchise from State for bridge from foot of Grand Street, Manhattan, to Hudson Avenue, Brooklyn. Waiting for a purchaser.

North River Bridge. — From Fifty-ninth Street, Manhattan, to the Jersey Shore. Company formed and capitalized at $60,000,000. Contracts mostly made and Jersey approaches building. Manhattan approaches now under consideration.

North River Bridge. — From near Twenty-third Street. In embryo. A company under the temporary presidency of Gustav Lindenthal is trying to push the scheme. Exact status unknown.

TUNNELS.

Rapid-transit Tunnel. — To run from Post-office Square to Ninety-sixth Street; then two branch tunnels to north of the Harlem River. To be built by the city. Contract given to John B. McDonald for $35,000,000. Work to begin within a few weeks. Time of building, three to four years.

South Brooklyn Tunnel. — Plan for a tunnel connecting the Battery with Brooklyn near Hamilton Avenue, to be built by the city as a connection with the rapid-transit tunnel. Resolution giving $50,000 for borings has passed Municipal Assembly; now before Board of Estimate and Apportionment.

New York and Long Island Railroad Terminal. — Application for a tunnel franchise connecting Cortlandt Street, Manhattan, with Flatbush Avenue Station of Long Island Railroad in Brooklyn. Now before the Municipal Assembly. To be built by New York and Long Island Railroad Terminal Company.

North River Tunnel. — From Lackawanna coal piers in Hoboken to a point opposite in Manhattan. This plan has failed several times, and is now apparently abandoned.

Durability of Paint on the Forth Bridge. — In a most interesting paper upon "Protective Paints for Iron," read last month before the Newcastle section of the Society of Chemical Industry, Mr. Harry Smith referred to a report which he had received from Mr. A. Hunter, Resident Engineer of the Forth Bridge, upon the behavior of the paint upon that structure. All the iron employed in the superstructure of this bridge was scraped clean and given a coat of linseed-oil, applied as hot as possible, after leaving the shops or yards. The iron then received a coat of red-lead paint, either before or immediately after its erection. Then a second coat of red lead, followed by two coats of oxide-of-iron paint, were applied. Mr. Hunter finds the life on the upper portions exposed to the weather to be about three years, but the paint inside the tubes of the bridge is as perfect as when first applied more than twelve years ago. Where signs of rust appear, the iron is scaled, scrubbed with wire brushes, coated with boiled linseed-oil, then with a mixture of red-lead paint and iron-oxide paint, and finally with brown oxide-of-iron paint. The lower parts of the bridge near the water have to be cleaned and re-painted once every year, for here the salt spray soon causes rust to appear around the rivet heads and the edges of the plates, and this rust has a tendency to extend in fungus-like patches until the whole plate becomes affected. Mr. Harry Smith expresses some doubt regarding the utility of the coat of boiled linseed-oil without pigment; but, with this exception, his experiments indicate that the treatment adopted for the iron of the Forth Bridge is as effective as any that can be devised. — *The Builder.*

Waste of American Lumber. — Apparently abundant testimony can be found to support either side of the controversy as to the waste of our lumber-supply; for instance, while we believe that a terrible wrong is being done, in the annual report of the Maine Bureau of Labor statistics, just issued, Commissioner Matthews arrives at the following conclusions regarding the lumber industry: "The outlook for the Maine lumber industry is bright. There has been comment on the danger of destruction of the forests of the State. It has been stated that, if the plans of various concerns were to be fully carried out, it would be but a question of a few years before the mill-owners would have to look elsewhere for their timber. From conversations with prominent operators and owners, it is found that these are regarded as pessimistic views, and that there is cause for no immediate alarm concerning the destruction of the forests. Most of the best and most extensive timberlands are held by large owners who will cut conservatively and not make serious inroads into the forests, in order that the value of their property may be maintained and the supply kept growing for future use. An element of danger which exists is that certain lands are held by small owners, who find it difficult to make their business profitable, and are obliged to cut immature lumber, without waiting for the fuller development of the trees. Another danger is that when the stumpage is sold at a high price, the operator is bound to get his lumber out regardless of waste. In this way many small trees are destroyed. Fortunately, the men prominent in the lumber business of the State are alive to the importance of maintaining permanent water-supplies, as well as permanent lumber-supplies, and we may still safely look to this great industry as a source of widely disseminated wealth and prosperity."

Sir Benjamin West's "Raising of Lazarus." — The announcement that Sir Benjamin West's picture "The Raising of Lazarus," which has formed a conspicuous feature of the screen of Winchester Cathedral for more than a hundred years, has been sold to an American firm has caused great regret in the diocese generally. The price paid for it is stated to be £1,500. Replying to a number of criticisms which have been passed upon the Dean and Chapter for their action, Dean Stephens states that the picture was not presented to the cathedral, as is generally supposed, but was purchased in 1781. The picture, he states, is intended for the new cathedral church in New York, "a much more fitting home for it than in our own cathedral, where it was out of harmony with all its surroundings, and spoiled the proportions of the screen." He adds that the proceeds of the sale will be devoted to decorative work in the Lady Chapel. — *The Building News.*

The Health of Trees in Paris. — From a lecture delivered a few days ago in the Sorbonne by M. Mangin, it would appear that Paris possesses about 80,000 trees in the streets and public places of the city. It is calculated there are 26,000 plane trees, 17,000 chestnuts and 15,000 elms, the remainder consisting of sycamores, maples, lindens, etc. Apparently there is only one oak and one mulberry. Although the trees add so much beauty to Paris, there is a large percentage of mortality among them. In the centre of the city they suffer from want of air. In the gardens of the Luxembourg, Tuileries, and in fact in all which are surrounded with houses, what M. Mangin calls the reverberation of the sun's rays is fatal to many trees. He maintains that the trees breathe not only by means of the leaves, but also by the roots, and consequently in streets where the ground is hard it is difficult for a tree to be in a healthy condition. Of late years the scavengers have cast salt on the pavement in order to dissolve the snow. This substance, he considers, is most prejudicial to the roots of trees. But M. Mangin believes the greatest enemy to the Paris trees is the engineer, who carries out excavations without regarding their existence. — *The Architect.*

Combustion in Liquid-air. — When air is liquefied, nitrogen and oxygen condense simultaneously, so that the liquid has the composition of the gas mixture in the air. As soon, however, as evaporation recommences, the composition begins to change. At first the escaping gas is essentially nitrogen. After a while the vapors again contain the two gases in the proportions in which they are found in the atmosphere. That point occurs when about seventy per cent of the liquid has evaporated, and 81 per cent of the original nitrogen, and 35 per cent of the oxygen have escaped; the remaining liquid contains the two bodies in equal proportions, afterwards oxygen begins to predominate in the vapors. These numbers concern evaporation at atmospheric pressure. *In vacuo*, the evaporation of the two gases proceeds more rapidly; at increased pressure, more slowly. The changes may be observed with the help of a glowing chip of wood. At first the wood will be extinguished, when held over the liquid; then it will brighten up, and when dipped into the liquid burn intensely. Powdered carbon, soaked with liquid-air, puffs away like gunpowder on ignition, and explodes when a detonator cap is employed. This seems very strange when we think of the exceedingly low temperature of the liquid — 180 degrees Cent.; and in a paper brought before the Bavarian Academy of Science, Carl Linde expresses the opinion that we may have to modify our views on the nature of explosions. Petroleum, absorbed by kieselguhr or powdered cork coal, can be saturated with liquid oxygen. Such a mixture explodes even when not confined. Cartridges filled with it cause others, placed at a distance of 25 centimetres (10 inches) from them to explode, while with the highest explosive so far known, blasting gelatine, cartridges 15 centimetres away from the detonating cartridge remain inactive. Linde has tested this preparation at Schlebnoch. Within a steel bomb of 20 litres capacity blasting agents are exploded by means of fulminate of mercury. The gas pressure is registered by a piston on a drum which has a circumferential velocity of 330 centimetres (10 feet) per second. The petroleum liquid-air preparation gives a curve which demonstrates that the maximum pressure surpasses that obtained with blasting gelatine, and is reached in a shorter period of time. The preparation was simply wrapped in paper. It is singular that such a mixture should burn more rapidly, in spite of its low temperature, than any solid or liquid compound we know at ordinary temperatures. — *Engineering.*

A Curious Landslide. — A mile south of Atchison, Kan., the entire side of a bluff is sliding into the Missouri River. The avalanche is a quarter of a mile long, and at its base is the most expensive piece of railroad-track on the Missouri-Pacific system. There is probably not another quarter of a mile of track in the United States which it costs more to maintain. The odd thing about this monster landslide is that it has been slipping down for twenty years, and unless it takes an unexpected plunge will probably be slipping for the next twenty years, and possibly fifty or a hundred. The avalanche is moving more or less at all times, but not enough to require watching by the Missouri Pacific except about two months in the spring. During the winter the moisture is held in the ground, and when the frost thaws and the spring rains come the great mass of earth begins slipping. Sometimes it comes down a foot in twenty-four hours, and once in a while it slides 6 feet. The Missouri Pacific then puts a force of from twenty to fifty men at work pulling the track back to its proper place and keeping it level. A man is employed to watch the track at night and see that it does not get so far out of line as to topple a train over into the river. Orders are issued to engineers to go slow over the bad track, for the jar of a train might cause an unprecedented move. The current of the Missouri River is always very swift in the spring, and it wears away the earth as it slides in, and it appears a few miles below in the form of an island. The bluff is one of the highest of the very high bluffs along the Kansas side of the Missouri River from Kansas City to the Nebraska line. Lying under about fifteen feet of earth there are one or more strata of rock aggregating from twenty to forty feet in thickness. There seems to have been a perpendicular split down through this rock dividing the bluff almost half in two, and extending a quarter of a mile north and south. The side which lay on the river, or east side, slid because there was nothing to hold it, while the opposite or west side was up against another bluff. Thus the east side began gradually to sink into the river, and has laid bare a wall thirty or more feet high in places. Here and there enormous boulders, which hung for a long time undecided with which side to identify themselves, finally lost their balance and crashed down, dashing themselves to pieces below. It costs the Missouri Pacific several thousand dollars and causes a great deal of anxiety every spring, but there is no way of avoiding it. — *Chicago Record.*

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INDICATIONS that the prices of building-materials will slowly decline during the remainder of the year come to notice nearly every day. A newspaper paragraph recently mentioned that several of the great blast furnaces were storing pig-iron, "in anticipation of future renewed demand." It is hardly necessary to say that a manufacturer of pig-iron who could sell all his product at present prices would not be likely to trouble himself about "future demands," and the paragraph, supposing the information conveyed in it to be correct, evidently means that the supply now exceeds the demand, and that the furnaces, not being able to sell all the pig-iron that they make, and not being willing to shut down, are storing the surplus, trusting to luck to furnish them a market for it later. Meanwhile, several enormous plants are under construction in various parts of the country, and will soon be in operation; so that, if the present production exceeds the demand, the production of a day not far distant will exceed it still more, and the piling-up of pig-iron "for future demands" will go on still faster. If the present demand for iron were exceptionally light, there might be a prospect that all this surplus could be absorbed a few months hence; but it is, on the contrary, the greatest ever known, and the fact that it has already been overtaken by production simply furnishes another illustration of the rule that production, in modern industry, soon overtakes any demand, however extraordinary.

IN finished iron the same process has begun. Notwithstanding the protection of an enormous tariff, and a perfection of processes which makes it possible for our manufacturers to sell their surplus profitably abroad, and thereby dictate prices at home, the anticipation of domestic competition from the new plants outside of the combination, added, perhaps, to a suspicion that the protective tariff on manufactured iron may be successfully attacked in Congress before long, seems to be disquieting enough to the producers to dispose them to a gradual reduction of prices. Steel billets, for example, have been reduced in price eight or ten per cent at the mill already, and rolled shapes are likely to follow; and it is very improbable that this concession will be the last. Copper, also, has fallen about twenty per cent from its price of a few months ago; and, although a convulsive attempt seems to have been made by some of the more closely-controlled combinations to put up prices still further, as, for example, in the case of enamelled iron goods, wrought-iron pipe and window-glass, it is not likely that they can long resist the effect of gradual decline in other materials, aided by increasing competition, and the fear, which will grow more acute as the elections draw near, of tariff changes. In lumber, while the immense production that was arranged for by dealers, coming upon a very material falling-off in demand, would naturally have tended to concessions after the arrival of the new stock, the weather has been so mild that very little timber has been brought to the mills; and, unless the remaining weeks of winter afford relief to the lumbermen, not much new stock will come to the yards next season from the northern forests, and the prices of spruce and pine are not likely to go much lower with a scanty supply. If, however, March should be cold and snowy, there will be great activity in the forests, and it is not impossible that a full supply may be brought out.

IN studying the outlook for the coming building season, the new finance bill, which has just passed the United States Senate, should be taken into consideration. This bill, which will probably pass the House without substantial change, besides the definite establishment of the gold standard, which will tend to promote confidence in the stability of business conditions, provides for a very material inflation of the currency, by permitting national banks to increase their circulation at once to the par value of the bonds deposited to secure it, and by authorizing the establishment in towns of an indefinite number of small banks, with a capital of twenty-five thousand dollars or more, all of which can issue circulating notes, and are very likely to do so. All this new money will seek employment somewhere, and, as good stocks, at present prices, pay a very small interest, and are very likely to be worth much less, six months or a year hence, than they are now, it is probable that the movement developed by the increase of currency will be in the direction of investment in real-estate, rather than in stocks or bonds. Reasonably good real property now pays, as a rule, a better interest than stocks and bonds, and rents, which have been very low for several years, are, on an average, decidedly rising. This alone would dispose investors to turn to real-estate, but, in addition to the larger income which it offers, real property has been nearly quiescent for a long period, and any change would naturally be for the better; so that the purchasers of improved property, in place of stocks, could look forward, not only to a larger income, but to an increase in their principal which no political storms are likely to disturb. The high price of materials, while it will unquestionably prevent building, will make property already built upon at former prices seem particularly desirable, and it is probable that the passage of the Finance Bill, with the consequent assurance of currency inflation, will be followed at first by transfers of improved estates, rather than by speculative transactions in vacant land. This movement is likely to bring with it alteration work, with which our architects and mechanics will, as it appears, have to content themselves mainly for a time; but as the probability of a fall in the prices of materials to ordinary figures grows nearer, the wiser operators will try to secure desirable parcels of vacant land at the old prices, and we may hope to see the building industry resume its normal activity.

ARCHITECTS and lovers of art will, we imagine, open their eyes at the announcement that "the plans are all drawn" for additions to the Capitol at Washington, consisting, we are told, of porticos and "aprons," to be "thrown out" on the east and west sides of the building, "to match and correspond with the porticos of the two great wings." As anything of the kind on the east side would, independent of ruining the effect of the building, be nearly inaccessible, on account of its height above the ground, we are informed that "of course," the portico will have "a magnificent flight of steps, having ascended which the visitor will pass through a pillared pylon into a great marble vestibule, vieing in beauty with the famous marble room of the Senate." What sort of thing a "pillared pylon" may be we cannot even guess, but the rest of the description suggests the probability that it is some evolution of the "Romanesque-Picturesque," or the "American Ovo" style. The purpose of making these extraordinary changes in what we still consider to be the most beautiful building in the world is to gain additional rooms, partly in the pylons and aprons and other features, and partly by "chopping up" spaces already existing in the Capitol; and, in all these ways, ninety-three extra rooms will, we are told, be obtained, "every one" of which "will be lighted by exterior windows, an obvious advantage."

IT is impossible to believe that the Government of the United States really intends to permit such ignorant mangling of its greatest artistic treasure as this account implies. The triumphant air with which it is announced that the designer of the proposed additions has provided "exterior windows" for his rooms, just as if it were the habit of competent architects to plan dark rooms in public buildings, goes well with the information that a "pylon," which is, according to accepted architectural language, a truncated pyramid, such as the Egyptians built in pairs, on either side of the entrance to their temples, is to have "pillars" inserted somewhere under or inside it, and is to serve as the entrance to the delicately classical Capitol. We do not say that the Capitol must never be added to or changed; but, if a change is to be made, nothing short of the highest artistic talent that the country can furnish should have anything to do with it; and, even then, it should not be undertaken without long and ample public consideration.

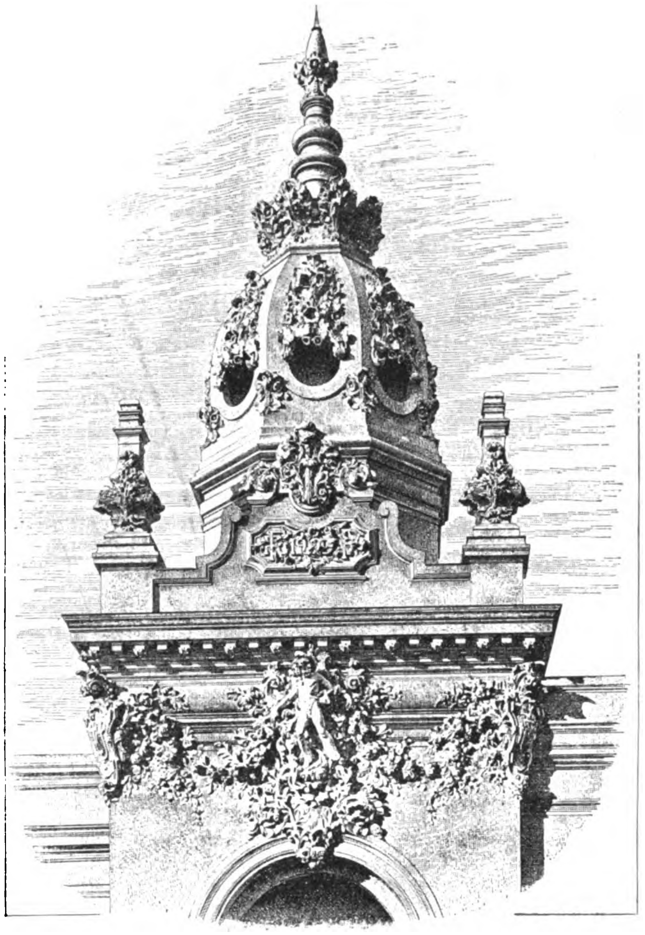
A DISCUSSION on quicksand, which will interest architects, took place the other day at a meeting of the American Society of Civil Engineers. The most sensible and scientific contribution to the discussion was made by Mr. Allen Hazen, who began by disposing of the common idea that quicksands contain clay, saying that a true quicksand rarely or never contains clay. One of the participants in the discussion, who said that he had "never seen quicksand that did not contain clay," gave Mr. Hazen several samples of material labeled "mixtures of clay and sand," which were examined with a microscope, and proved to contain no clay whatever. Another common notion refuted by Mr. Hazen was the one that the particles of quicksand are rounded, so that they flow more easily than those of ordinary sand, with angular grains. According to his careful experiments, it makes no difference whether the particles of quicksand are rounded or angular, or whether they are large or small, the essential condition being that the voids between them shall be more than filled with water, through a hydrostatic pressure which tends slightly to lift the particles. As the grains of fine sand are much more easily lifted than those of a coarse sand, the pressure needed to convert fine sand into quicksand is less than is required for converting coarse sand, an upward flow of water of an inch and one-half an hour being sufficient to convert into quicksand material having particles three one-hundredths of a millimetre or less in diameter, while mortar-sand, the particles of which have a diameter of one-fifth of a millimetre or more, requires, to convert it into quicksand, an upward flow of from five to twelve feet per hour. As an illustration of a typical quicksand, Mr. Hazen referred to the material in a mechanical filter, when in process of washing by an upward current. This sand is usually rather coarse, and the velocity of the current is not allowed to become great enough to carry the sand away; but the slight surplus of water in the voids between the particles lubricates them, so to speak, in such a way that the mass of sand offers little more resistance than so much water to any disturbing influence.

IF the quicksand condition is caused by surplus water in sand, the obvious method of removing that condition is to remove the surplus water; and experience shows that this is entirely sufficient. A contractor once agreed to execute a railway cutting, but in the course of his work, came into a "pocket" of quicksand. This was, to him, so unmanageable that he abandoned his contract. Other parties completed the work, and, by the simple expedient of draining the pocket into the railroad ditch, made the cutting without difficulty, giving the banks, which are still in good condition, the very steep slope, for sand, of forty-five degrees. In architectural work, where quicksands are more likely to give trouble in foundations than anywhere else, special means may be required for draining them; but, where surplus water can be kept out of them, they need present no more difficulty than other sand.

THE profession has been much interested in the designing of the Lafayette Monument, to be presented to the French Government by American citizens, and to stand in the courtyard of the Louvre. It will be remembered that, from the first, it was thought best by the Monument Commission to award the execution of the monument without any general competition; and, on the advice of Messrs. J. Q. A. Ward, George B. Post and John LaFarge, Messrs. Bartlett and Bitter were requested to submit models for the statue of Lafayette, while Mr. Hornbostel was retained, to design the pedestal. Of the two models for the statue, that by Mr. Bartlett was chosen. One of the conditions under which the French Government accepted the gift, and assigned it a place of such extraordinary distinction, was that the designs should be acceptable to M. Redon, the architect in charge of the Louvre, as representative of the Ministry of Fine-Arts. The model for the statue by Mr. Bartlett seems to have been approved from the first by M. Redon, who, in one of his official letters, calls it "charming," but the design for the pedestal was not so fortunate. The first suggestion was that the statue should stand beside a sort of "pylon"; but this idea was not approved, even by the American advisory jury, which instructed Mr. Hornbostel to arrange for a simple architectural pedestal, apparently, however, providing for ornamenting it with reliefs, as Mr. Barnard was requested to undertake the designing of this part of the sculpture. On the arrival in Paris of the designs for a pedestal of this kind, they were, however, rejected by M. Redon, with what seems to people unaccustomed to the conscientious devotion of French artists to purely artistic considerations, rather unceremonious decision. M. Redon pointed out the interesting fact that Lefuel, the architect of this portion of the Louvre, indicated in his original drawings an equestrian statue in the courtyard, as a sort of artistic climax to the composition, and M. Redon said that, on this account, if on no other, nothing but an equestrian model would have been accepted. In regard to the pedestal, however, he said that figure-decoration was objectionable, as recalling too much the Gambetta Monument close by, and that the pedestal should be purely architectural, and should harmonize with the architecture around it. Even without the sculpture, the pedestal, as shown on the sketches, did not seem to him satisfactory, and, as there is certainly no time to be lost in the preparation of drawings for a monument which is to be unveiled on the Fourth of July next, he suggested that Mr. Thomas Hastings, in whose talent he had great confidence, should be engaged to design the pedestal. This proposition was cabled to the Monument Commission in this country, and the advisory jury immediately called together to consider the substitution of Mr. Hastings for Mr. Hornbostel. This was a matter in regard to which, under the circumstances, only one decision was possible, but Mr. Post qualified his vote by assenting to the change only in case Mr. Hornbostel should voluntarily resign his task. This formality was complied with, and Mr. Hastings commissioned to prepare drawings for the pedestal at once. Naturally enough, Mr. Hornbostel and Mr. Barnard, and their friends, feel themselves a little injured in the matter, but it is evident, from M. Redon's official letters, that he took the entire responsibility for the decision, feeling himself bound, as the guardian of the æsthetic interests of what he calls the "marvellously artistic" Louvre, to exert his authority unhesitatingly and effectively.

NEW YORK is said to be seriously threatened with the loss of its import trade, on account of the foolish and unwarranted annoyance and persecution to which persons are subjected who attempt to enter foreign goods at the Custom-house there. It would seem as if an average duty of sixty-five per cent might be a sufficient penalty to inflict upon American citizens who bring home foreign goods not intended for sale, without adding to it insincere and absurd attempts to place articles in classes to which they obviously do not belong, for the sake of increasing the duty, depending, for the enforcement of such demands, on the unwillingness of returning travellers to submit to the delay and expense incidental to an appeal to higher authority. In a recent case, Mr. George Gould bought in London a precious work of art, in the shape of a basin and pitcher of Limoges enamel, on a copper foundation, like all other Limoges enamels. These two pieces, which were ornamented by Suzanne Court, of Limoges, about the year 1550, cost Mr. Gould in London fourteen thousand dollars, and he entered them, under the only class in which they could have been placed by any sensible man, as paintings. The pieces reached New York in October, 1897, and were immediately classified by the appraiser as "porcelain," and a duty of sixty per cent levied, in place of the twenty per cent to which they would have been subject as paintings. Mr. Gould appealed to the Board of Appraisers, which decided that the classification was correct; and it was not until he appealed again to the United States Circuit Court that a decision was given classifying them as works of art, the value of which consisted in the art, rather than the material, and releasing Mr. Gould from the demand that he should pay, as a penalty for enriching his country with an almost priceless artistic treasure, what he would have had to pay if he had imported a thousand bath-tubs for sale.

NOTES ON SOME EUROPEAN SYSTEMS OF FOREST ADMINISTRATION.[1] — II.



Cupola from an Exhibition Building on the Esplanade des Invalides, Paris.

IN the Alps, says Portalis, it was the forests alone which maintained, as it were mechanically, the soil ever ready to escape from their steep slopes. The pastoral population of these mountain regions, poorer than those of the valleys below, had most abused the new freedom of individual action under the Revolution. They cut away the forests to increase their pasture-lands. Their ignorance cost them dearly. The pastures disappeared with the tree-covering. The turf could not renew itself without the fertilization it received from the forest humus.

Torrents came and ploughed the mountain-sides. Instead of rich meadows the peasant found the barren rock. The forest shield gone, the higher terraces were no longer fit for cattle. Landslips and avalanches were at work, scouring off the soil to bury the foothills in débris. Meanwhile, the area of the State forests was being lessened by sales.

The Restoration also, finding the nation burdened with debt, raised money by selling 164,000 hectares of the public forest, from which the timber was at once cut off. After 1830 there was another sale of 117,000 hectares, followed by extinction. In 1848 a government loan of 150,000,000 frs. was secured on 75,000 hectares of State forest. Each new *régime* paid its way in at the cost of the forests. In 1865 it was proposed to raise 100,000,000 frs. by this means, but the plan was abandoned on account of public protest. Recent serious floods had roused the people to the dangers of destroying the forests.

Meanwhile, the communal forests had continued to have a sort of system. Wholesale clearing of private forests had been stopped by the decree of Floréal in the year XI. Already its effects were becoming serious. The pasturages dying out on the disappearance of the forest left the resultant torrents full swing. Overstocking, which had gone on unchecked for a long time, played also a considerable part in the death of the pastures.

The rights of common pasturage existing in most of the communes had been much abused. The common pasturage contrasts to-day very unfavorably with the private holdings. The peasant looks after his own well enough, as a rule, and does not use his pasture to exhaustion, but he will turn out the greatest possible number of head on the commons as soon as the snow is off, thus destroying the tender young growth. The soil is too soft at that time, and the hoofs, especially of sheep, cut the roots and kill the more delicate herbage. The sheep, coming out from their winter stabling famished for green food, devour everything that shows above ground. The south slopes, where they are driven as soon as the ground shows, are laid waste, and certain sheltered places where the snow lies least are inevitably destroyed.

The destruction of ranges by overstocking is known by innumerable examples to our herdsmen of the great Western pastoral regions of the United States. The far-reaching consequences of such abuse, the degradation of soil and extinction of herbage on the mountain-slopes in sparsely timbered regions, the resultant growth of torrents and the continually increasing injury these do the cultivable valley-lands in covering more and more of their area each year with detritus, have been too little studied and taken account of.

One instance of many which have come under the writer's notice among our Western sheep-ranches was as follows: — From a certain ranch the herd kept open the whole winter a trail through deep snow to a spot on the south face of a neighboring mountain-head where no snow lay. When the weather was favorable they were let out of their pens every morning, and at once made off up this trail in a long file, toiling up for hours, to browse an hour or so in the sunshine, and then return for folding at nightfall, which they did with great regularity and without loss, though always unattended. Now, this was more sagacious of the sheep than of their masters.

As the spring opened their feeding-time on the summit lengthened out until the foddering at the sheds was stopped and they remained above permanently. Two seasons of this abuse of the scant herbage left on the mountain's south shoulder a barren spot which spread into the neighboring vegetation and began to show the ploughing of the formerly harmless waters. A torrent was born which in a few years laid waste the whole slope and annihilated a good range — which with management would have lasted out the time of its owners — to say nothing of its ravages upon the lands in the valley below.

The great mistake with the pastures is letting the cattle on them in the early spring. In summer and autumn reasonable stocking does no harm, the soil being firmer and the sod tougher. But they should at no time be overstocked, and must be given proper time for recuperation.

Some of the French mountain-communes do not regulate this matter closely enough. It is better managed in Bavaria and in parts of Austria. In the absence of strict regulation every one gets all he can out of the commons. The communes sometimes let pasturage to outsiders for migratory herds driven up in the early summer from Italy. This happens as well in certain border cantons of Switzerland and in the Austrian Tyrol.

Miane states that some 500,000 sheep invade the Alpine pastures every summer from the burning plains of la Crau. These animals, famished with the dust of the long march, attack the fresh grass of the mountain-pasture and devour it to the roots, while their countless moving hoofs chop and disintegrate the sod, leaving the soil in danger of being swept clean by the next torrent.

They crop the herbage close and maim the young tree-growth. Miane says of these sheep of la Crau, that they have a singular habit, learned on the stony plains of the South, of digging up the soil with hoof and muzzle as they feed, and this they continue in the mountains upon the steep slopes of the Alpine meadows, where the loosened soil, but insecurely held upon the slanting bed-rock, is quickly carried off by sudden torrential rains. In return for this damage, the sheep of Provence pay only 1 fr. 25 c. the head per season while native sheep yield a profit of 4 frs. the head. But the natives are too poor to own large herds and the commune lets in the migratory cattle rather than tax its own citizens.

These abuses of the pasturage are not less serious than the destruction of the standing timber, and have an important bearing upon the question of reforestation, inasmuch as that over a large area of the mountain-lands of France the humus is now too shallow to admit of replanting, the drought being thus more destructive to the young plants, whence it follows that well-sodded pasture can alone be looked to for the preservation of the soil against erosion.

The annual invasion of wandering herds, the overstocking of the common grazing lands, and their use too early in the spring have already gone far to destroy the more accessible meadows. Hence, the cattle are now being driven in greater numbers upon the upper pastures, which more closely concern the question of control of torrents.

These abuses have not until recently received, say M. Miane, the attention of the reforestation specialists, and the law of 1882 first takes account of this phase of the question. Miane heads a chapter thus: "*Le deboisement a fait naître le torrent.*" — Deforestation has made the torrent. — As the forest dies the torrent is born.

We need not follow his eloquent description of its sinister workings. We are familiar with the disasters which follow the sudden rise of the mountain-torrent. The mountain-side, stripped of the protecting forest and ploughed with ravines, is scoured away. Permeable earths are washed into the bed, filling it up and turning out the waters to plough new furrows. Terraces begin to move slowly downward. Shoulders and foothills become unstable, sometimes moving visibly, to rush down eventually in one grand flood of ruin, overwhelming the habitations, the copses and meadows upon the slopes, and burying villages and farms at their feet.

The Alps have seen many such catastrophes in recent years. Besides endangering human life, the torrents have done incalculable damage to property. It has been estimated that the famous flood of August, 1876, in the torrent of Sanières brought down a mud-flow of 234,000 cubic metres, about one-fourth water and the rest solid matter, covering to an average depth of an inch-and-a-half the whole surface of the basin which receives this torrent.

Thus the torrent, having ravaged the mountain-flank, dumps its booty into the valley, where it menaces the surrounding habitations and cultivated land, changing about continually in its ever-growing "cone of dejection" which rises high above the valley-level. Dykes are necessary to hold it back from the lands. Sometimes railroads have had to tunnel under it. It may shoot the floods from its rounding back in any direction upon the fields. The peril is constant. The rivers into which these torrents discharge are subject to sudden overflows, which destroy the crops along their banks and carry off trees and bridges.

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[1] Continued from No. 1258, page 36.

Surell's "*Etude sur les torrents des Hautes-Alpes*" mentions the Durance as a typical torrential river which in thirteen years has deposited 92,000,000 cubic metres of mud and slime on adjacent farm-lands. Roads in the course of such a stream are continually under repair. On the mountain-sides the roads are carried away bodily by great landslips. Villages are cut off from all communications. In torrential regions the private lines of railway are protected against loss by landslides, the government charging itself with consequent repairs, once the road has executed the necessary protective works.

The fate of St. Gervais, and the disasters of 1857, 1868 and 1876, are traceable to the denudation of the mountains and the resultant torrents.

Depopulation of mountainous regions has followed fast on the destruction of the forests. The immediate results of denudation, the waste of the pasture-lands and the ruin of crops by frost, drought, and inundation, drive off many families each year, and this in spite of the well-known deep love of the mountaineer for his native hills.

The *Département* of the Basses-Alpes averages eighteen inhabitants to the square kilometre. The torrential *arrondissement* of Barcelonnette drops this figure to twelve and a fraction.

Depopulation has acted most rapidly in the very mountainous deforested regions. The most mountainous portions of the Basses-Alpes have lost twenty-four per cent of population in forty years, according to Demontzey. The Barcelonnette region has lost 4,000 inhabitants. Deforestation and its attendant evils are the admitted chief cause of this. These things have been an object-lesson whose significance has not been missed in France. Their warning to ourselves is what many writers and thinkers to-day in the United States are striving earnestly to impress upon our people and our governors.

The theory which attributes the growth of torrents to the destruction of the forest, and which prescribes reforestation of the denuded lands as the only cure for the evil, was not accepted generally in France without opposition which at one time somewhat impeded the force of legislation in this direction. The principle is to-day hardly contested, the experience of many years and the splendid results of experimental reforestation having carried conviction everywhere.

But the practical French mind has been quick to see that reforestation operations were not sufficient alone to check the quickly increasing evils from former waste of forests. The time required for broad results by that means, ultimately the best and the most essential, was too long, and the cost of a general reforestation of the mountains too stupendous, to be faced at once. The specialists therefore have turned their attention to devising something which would give instant relief. And in the first line of improvement have been their masterly corrective works upon the torrents themselves, by means of dams, wattling, straightening, canalization and diking, and the wise regulations protecting the existing pasturages, and preventing the abuse of the standing forests. Matters which had hitherto been too little regarded, such as the abuse of the privilege of removing leaves, moss, litter, thus causing injurious disturbance of the forest soil, and the abuse of grazing on the borders of forests near the young plantations, etc., were in this connection studied and provided for. These corrective measures, in some cases very costly and involving careful expert study of individual cases, consideration of economic conditions, the conservation of rights to the populations of affected districts, the avoidance of prohibitive measures likely to deprive already diminished populations of their accustomed means of subsistence, have been designed and carried out with ability and success. The use of such auxiliary means has produced immediate results whose benefits serve to reconcile the people to the more far-reaching process of reforestation.

The legislation of 1882 was most important in its provisions for the regulation of the pasturage. Under this law the rights of grazing in certain forests and pasture-lands have been suspended during a period long enough to permit of a certain natural restoration of pasture and forest. The recuperative forces of nature have been protected in their workings, and the results have been instantly and unexpectedly excellent in some places. In others "the ruin has been too far advanced," to quote M. Demontzey; "the denudation too complete, climatic conditions too severe" for nature, even under long periods of rest, to produce more than insignificant results. "In the Basses-Alpes certain slopes whose use has been forbidden for thirty years have made no progress, the turf has not extended itself." Here thorough reforestation is the only efficacious means. The forestry reports multiply experiments and results upon which is based the finally accepted principle of administration which requires the auxiliary corrective works and the complete reforestation of certain regions to advance hand in hand. Reforestation will repair the old evils. Corrective handling of torrents will prevent the growth of new dangers.

More money is being appropriated each year for the extension of these measures of reclamation and restoration. The benefits hoped for are, reforestation, the extinction of torrents, the regulation of the flow of rivers, the cessation of inundations, the reclamation of arid lands, the safeguarding of the public highways, and, finally, the arrest of depopulation by bringing new lands into value and securing the woods, pastures and cultivable lands of the mountainous regions, thus bringing an addition to the public wealth and relief to suffering communities.

Here comes in the important question of whether the solution of the economic problem involved should be left to private initiative or determined by the intervention of the State. We will glance at the reasoning of M. Miane, who unhesitatingly pronounces for State intervention. This intervention is legitimate, he says, because it is necessary. Given the existence of a pressing danger, of conditions threatening the prosperity of an important portion of the country, conditions which can only be removed by State intervention, and we have a case where it becomes the duty of the State to act, and the duty of every citizen to accept and support such action, even at a sacrifice of personal and private interests. Such is his argument. The necessity for State intervention in the matter of reforestation has, he maintains, been amply proved by the disastrous experience of the first half of the century. Individual initiative had absolutely failed. The ignorance and poverty of the people, their indifference and indolent acceptance of a ruinous state of things, their disinclination to suspend the exercise of individual rights whose abuse was bringing destruction upon them, their attitude of obstruction to all corrective measures, the neglect of the communes to enforce proper regulation, and the rapid growth of all these evils and their ruinous results, called for the strong hand of the State. Collective action of the communes had been also tried and had failed. The State alone could pay the cost of the cure and enforce its application. This intervention at first bore hard on the people here and there, but the law of 1882 succeeded in eliminating the more vexatious features of its working, while adding to its efficacy.

M. Michel, in presenting this law to the Senate, thus justifies the part which the State plays under its terms: "The law has substituted its will for the blind indifference of private owners; it has willed to check the cupidity which is robbing France of her forests just as it prevents a man burning his own house in order to protect that of his neighbor."

The effective intervention of the State in the struggle against deforestation had been delayed by various causes, chief of which were the fear of causing discontent among the people, and appreciation of the economic and financial difficulties involved. Although no special measures had been formulated against deforestation previous to the legislation of 1860, the State had for centuries been making edicts to that end.

Already in the fourteenth century the Dauphin Humbert had forbidden the razing of the forests, "because they arrest the avalanches." In 1572 Provence had memorialized the king on the denudation of the Alps. In 1669 there is real legislation on this matter in the acts of the King's Council and in the decisions of the Sovereign Courts of Dauphiné and Provence. In 1605 the States of Provence petitioned the Court "that it might be pleased to look into the abuses which threaten to deprive the province of wood both for building and fuel, and, far worse, to destroy the good lands in the low places which are washed and carried off by the waters." Whereupon the king prohibited the destruction of public or private woods, and provided that those cutting for their own use were not to damage the roots of trees. The penalties were, for owners, a fine of five hundred livres, for outsiders, the lash and confiscation of cattle. In 1606 there was an edict against clearing for agricultural purposes. There were similar ordinances in the eighteenth century, and the famous laws of 1669 had created rigorous penalties for causing forest fires. The law of 1669 likewise prohibited the custom of grazing in the woods and forests, and even upon adjacent pastures. Some efforts were even made in the direction of reforestation proper. Edicts of the parliament of Provence required planting by all communities which had not at least eight hectares of woodland. Numerous regulations provided for the replanting of clearings in excess of a proper limit. There were dikes ordered, and the division among the interested parties of the costs of similar defences against the torrents. So that in these scattered and temporary provisions there will be found the nucleus of a complete reforestation and corrective scheme, to which, indeed, the law of 1860 added nothing altogether new. The law of 1882, as well, went over old ground.

It is agreed that the forest depredations of the Revolution are chiefly responsible for the condition of the mountain-lands of France at the end of the present century.

The laws of September, 1791, had abolished all the prohibitions pertaining to the forest and pastures. The ensuing destruction bore fruit quickly, and it was not long before the Basses-Alps reported: "The little streams are growing into torrents; many of the communes are losing their crops and herds, their habitations, by the streams breaking their banks. The hill-slopes are becoming bald and barren."

Some of the old provisions were restored. Later, there was a decree providing for certain protective works against the action of the torrents by syndicated communes under designated engineers, the costs to be assessed against interested parties pro rata on the accrued benefits. But such legislation was insufficient. Disasters multiplied. The prefects, the councils-general, the engineers and publicists sounded a warning. The work of Surel on the subject, in

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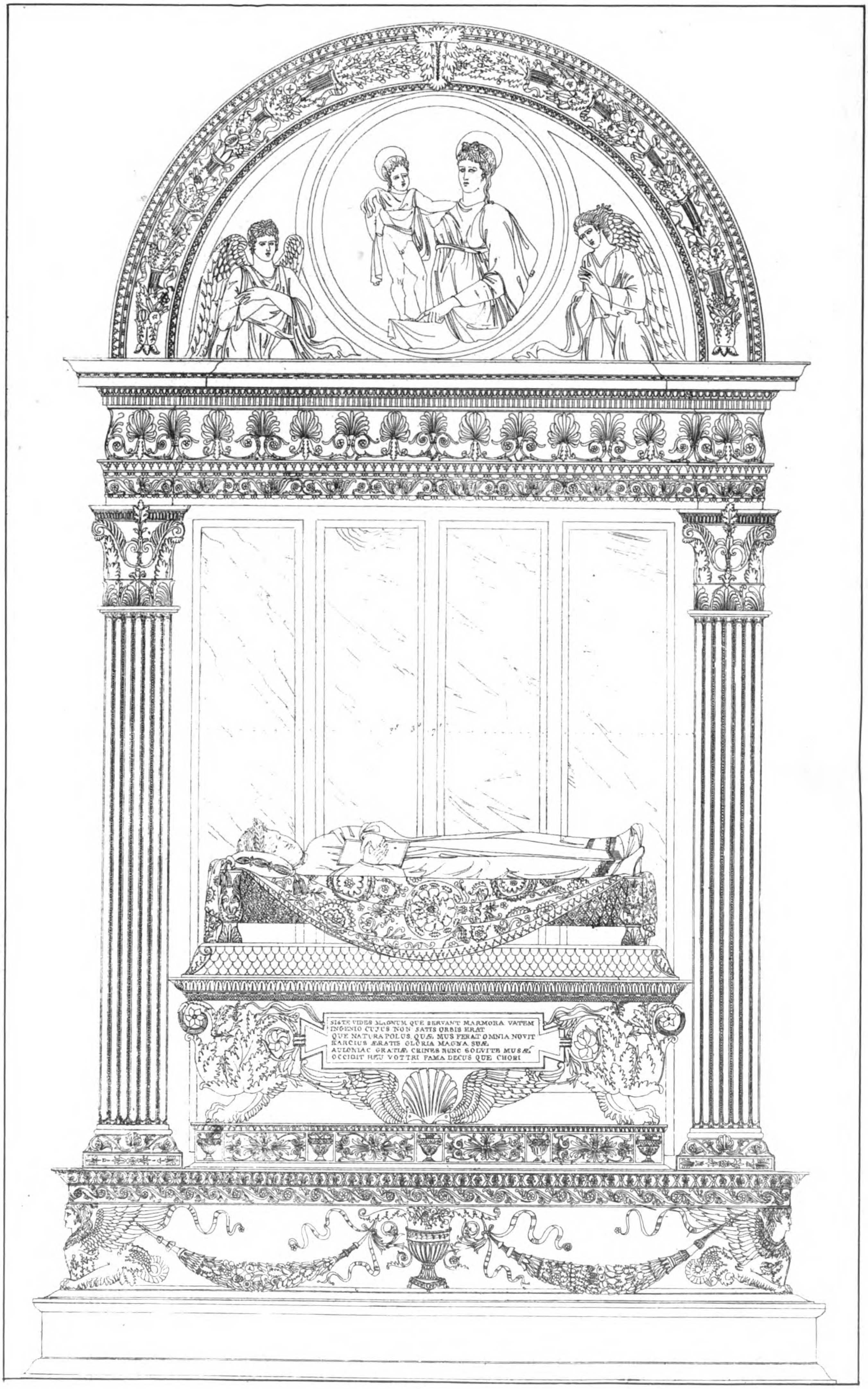
SISTE VIDES MAGNUM QUE SERVANT MARMORA VATEM
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OCCIDIT HEU VOTTRI FAMA DECUS QUE CHORI

TOMB OF CARLO MARZUPPINI, IN STA. CROCE, FLORENCE.

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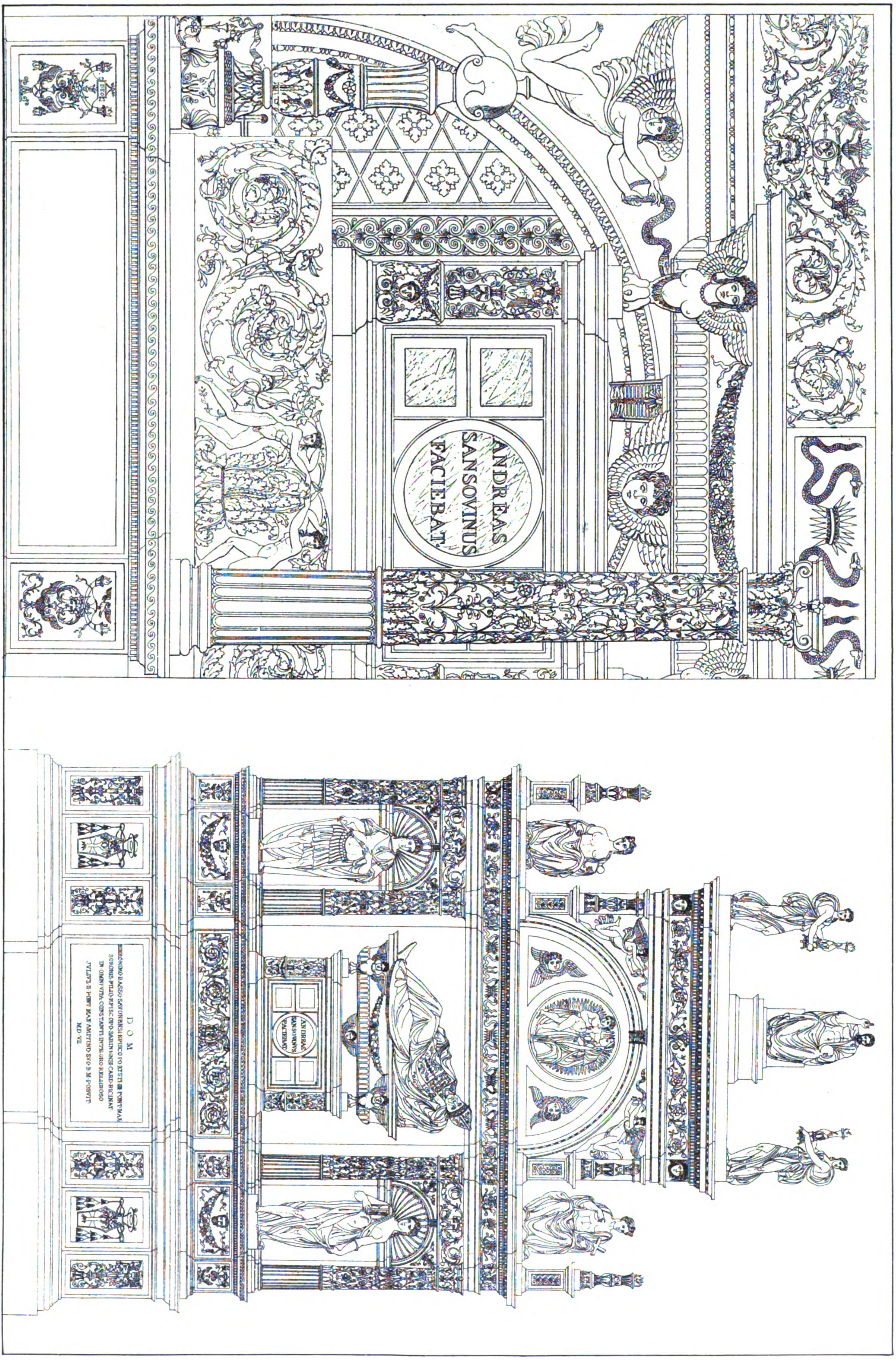
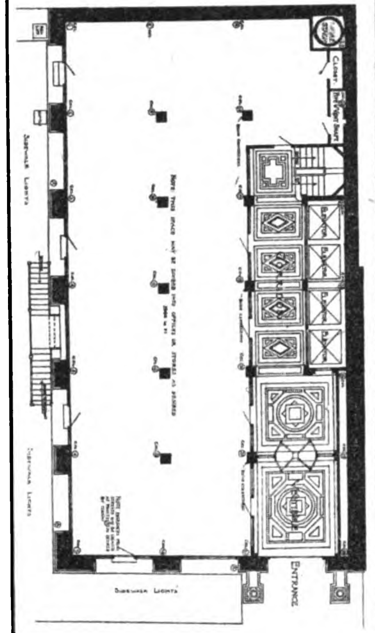
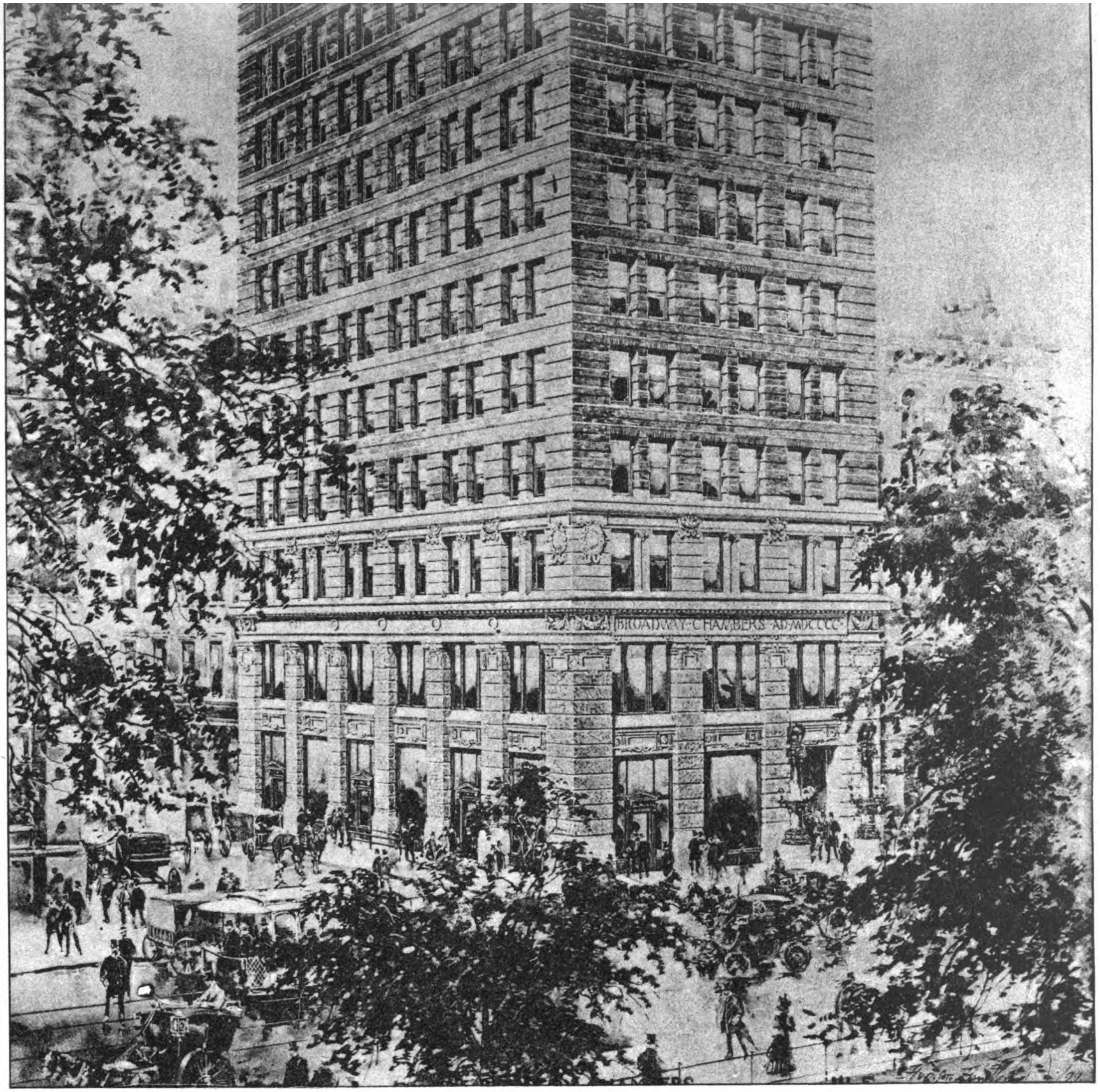
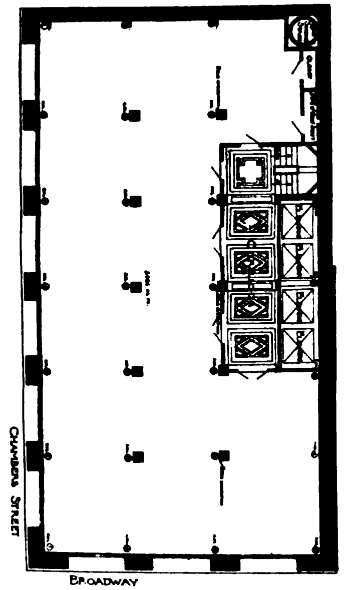


TOMB OF H. BASSO, IN STA. MARIA DEL POPOLO, ROME.



GROUND FLOOR PLAN





FIRST FLOOR PLAN

BROADWAY CHAMBERS. BROADWAY AND CHAMBERS STREET, NEW YORK, N. Y.
CASS GILBERT, ARCHITECT.

HELIOTYPE PRINTING CO., BOSTON

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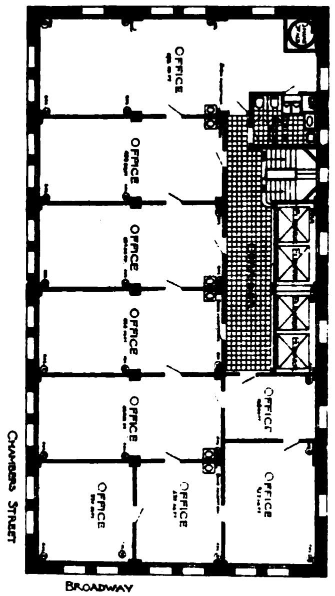
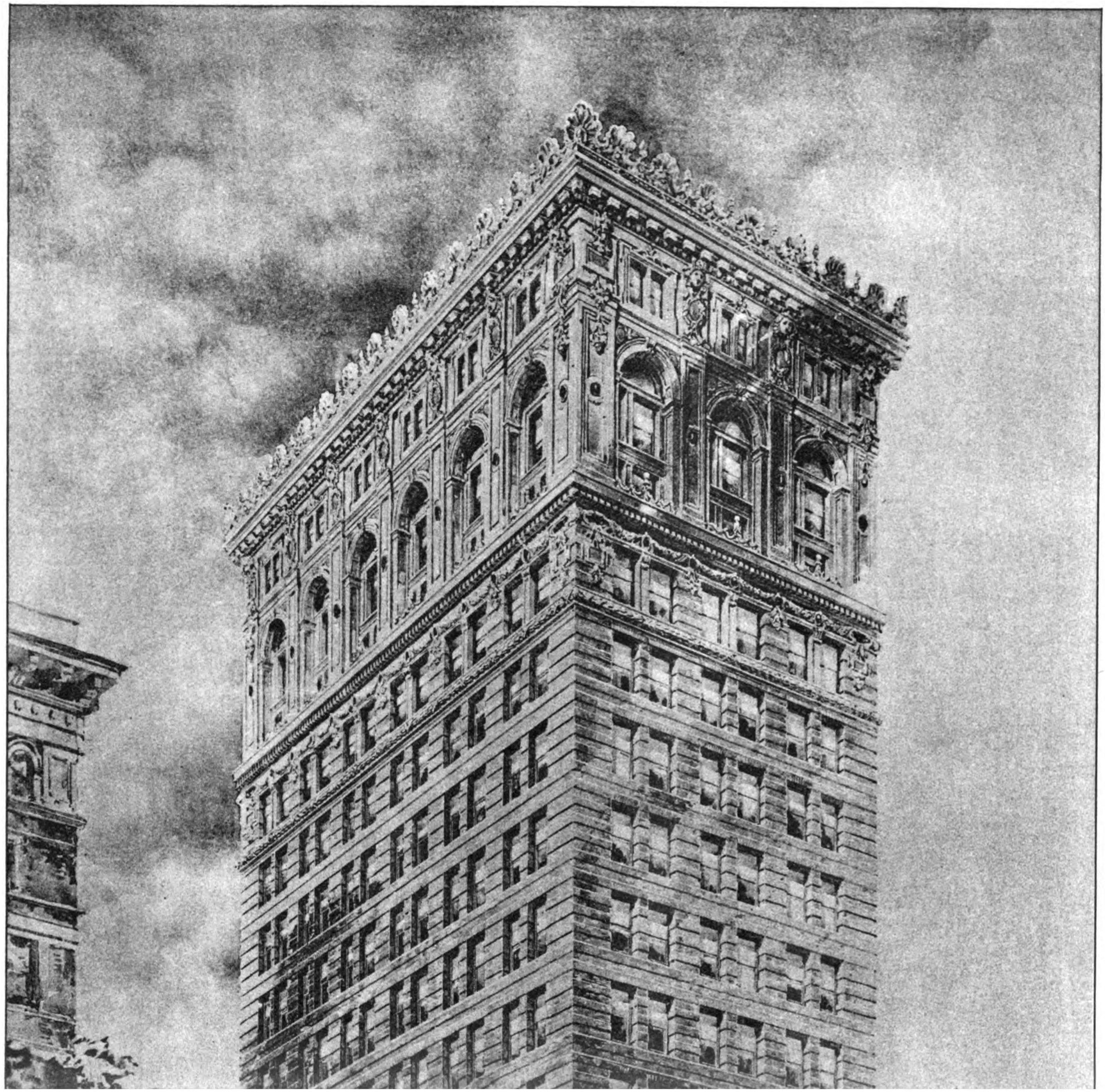
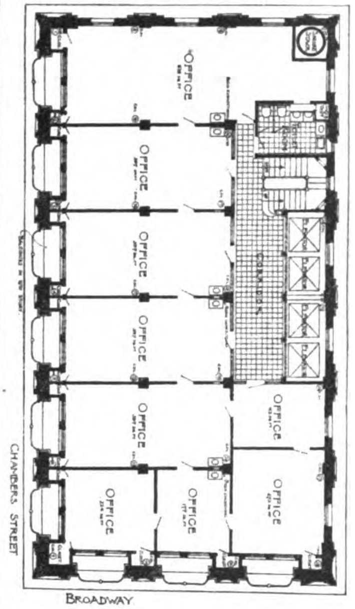
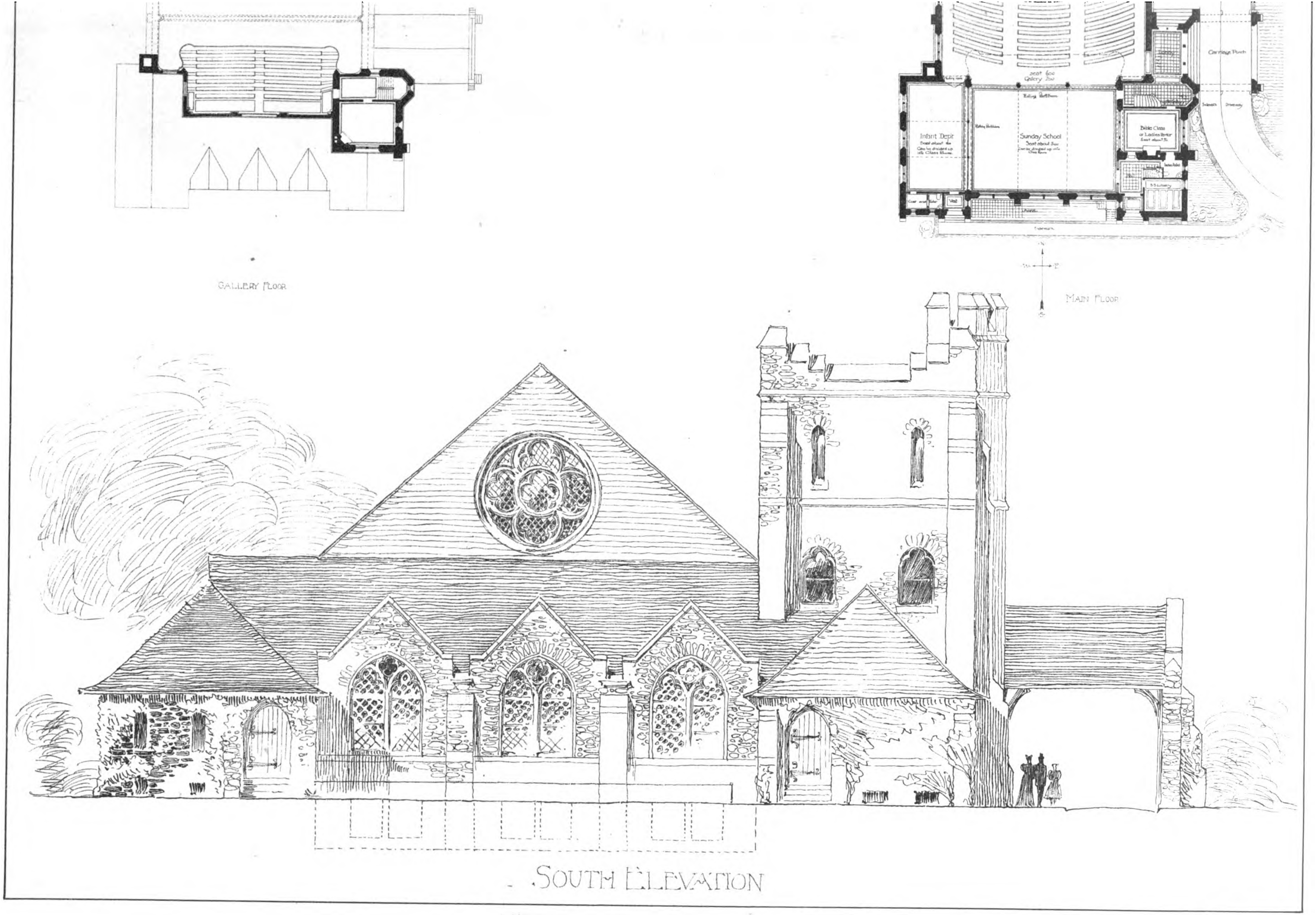


TYPICAL FLOOR PLAN





15TH & 16TH FLOOR PLANS



A METHODIST EPISCOPAL CHURCH FOR M——.

FRANK E. WALLIS, ARCHITECT.

HELIOTYPE PRINTING CO. BOSTON

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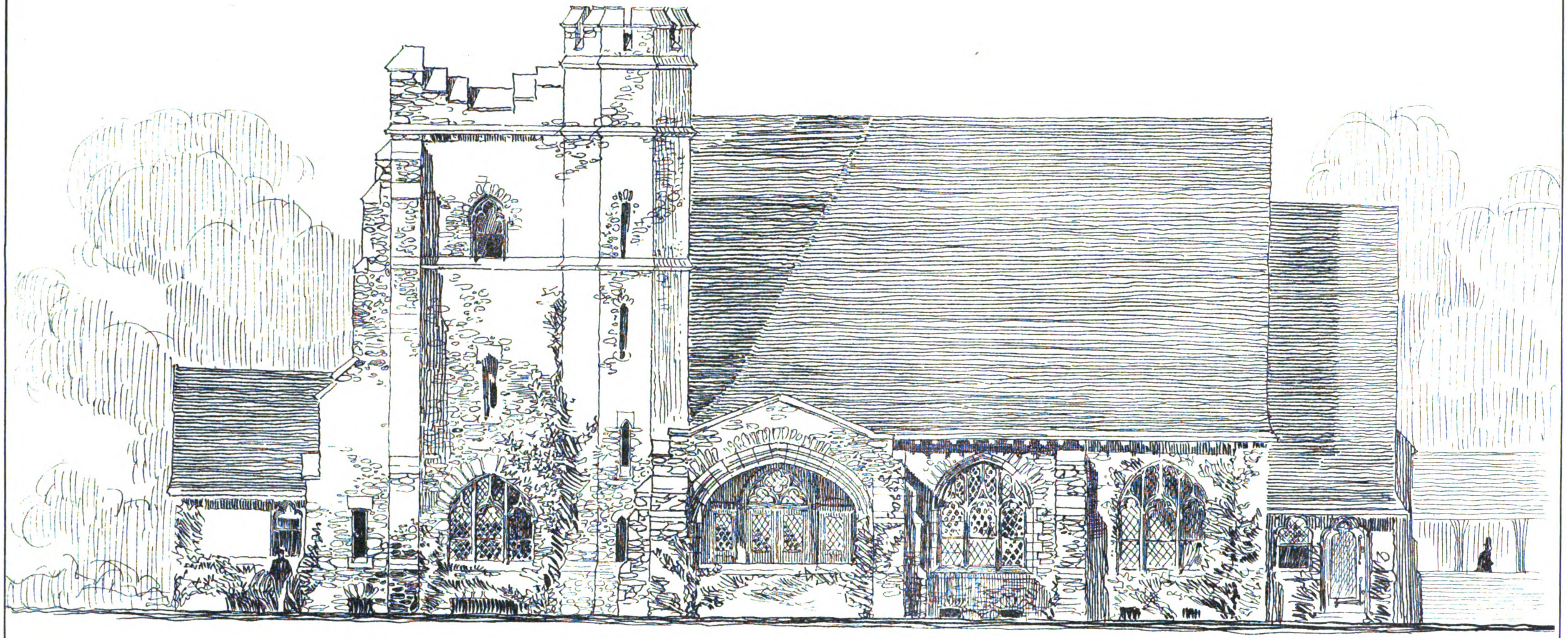
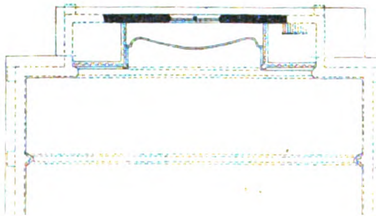
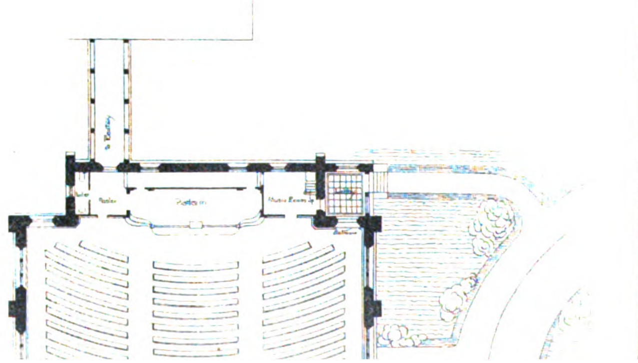


EAST ELEVATION





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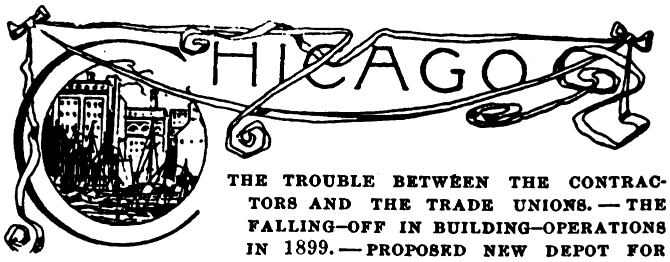
1841, made a great impression, and in the same year the Director-General of Forests put forward a comprehensive scheme of reforestation under the Administration at the cost of owners.

Some further tentative and unsuccessful legislation, and the inundations of 1855, 1856 and 1859 led up to the passage of the law of 1860. This, an admitted experimental measure, failed because of the extreme rigor of its provisions, and because it entirely neglected to provide adequate preventive measures. For a thorough analysis of this legislation and a filling-in of the historical data given briefly in the foregoing lines, the reader is referred to "*Le Reboisement*" of Maxime Miane, from whose pages the facts here presented have in part been borrowed.

The law of 1864 amended that of 1860 in certain provisions which were thought excessive, more particularly those regarding sequestration for great periods of time, and arranged for indemnities. It contained a concession to the interests of pastoral communities, which allowed returfing operations on certain degraded pasture-lands in place of reforestation, and was generally conceived more in a spirit of regard for the interests and rights of the people and of the communes. A. B. BIBB.

[To be continued.]



THE TROUBLE BETWEEN THE CONTRACTORS AND THE TRADE UNIONS. — THE FALLING-OFF IN BUILDING-OPERATIONS IN 1899. — PROPOSED NEW DEPOT FOR THE ROCK ISLAND RAILROAD. — THE ILLINOIS THEATRE. — OPENING OF THE DRAINAGE CANAL. — RECENT PICTURE EXHIBITIONS. — FIRST USE OF THE LIBRARY WATER-CURTAIN. — A WOMAN LANDSCAPE-GARDENER.

AT the present writing, interests in building circles are merged in the all-important question of the trouble between the contractors and the trade-unions. For the past month matters have been simmering and at one time the local press tried to persuade itself that the contending parties were about to "kiss and make up," though where any hearty agreement came in it was hard to discover. Any amicable settlement was certainly not forthcoming and the contractors, the first of the month, published the following ultimatum: —

"The unions affiliated with the Building Trades' Council having absolutely ignored the joint-arbitration agreement and failed to ratify same, we hereby make the following rules to be enforced by the contractors of Chicago, on and after February 5, 1900, and you will govern yourselves accordingly: —

"Wages for carpenters will be 42½ cents per hour.

"Wages for building laborers will be 25 cents per hour. Eight hours shall constitute a day's work.

"Time-and-one-half will be allowed for all overtime.

"Double time for Sundays and holidays.

"No limitation as to the amount of work a man shall perform in a day.

"No restriction as to union or non-union made material.

"No restriction as to the use of machinery.

"The foreman shall be the agent of the contractor.

"The right to employ and discharge whoever he may choose is reserved to the employer."

These rules, though first published by the carpenters, have been subsequently adopted by contractors of most of the other trades. They certainly are not unreasonable demands, for short hours and fair wages, the two just demands of the laborer, are granted, and the interference of the walking-delegate, at most times a worse tyrant than any contractor would ever dream of being at present, is strenuously and systematically repudiated.

At present writing the number of unemployed men is daily increasing, either as a result of some strike or lock-out, and it is thought that by another week all building-operations will be practically at a standstill. The contractors have promised to stand by one another and it is certainly to be hoped that this will be the case, for the unions as conducted at present in our city have grown to be chiefly a matter of boss-rule, in which many of the original good points of the association have been lost. If the contractors will stand together, and if as reported the strength of the unions has been weakened by a rival organization made up of men tired of the tyranny of the old trades' unions, there would be no doubt of the ultimate outcome of the fight. These two ifs are large ones and most important to final results. It has been reported that the rival association called the Independent Building Trades' Council has already furnished the contractors with names of 2,500 men who are ready to accede to the demands of the contractors, and take the places of the men called off by the unions. One of the strongest independent unions is that of the stonecutters, which equals in numbers the stonecutters of the old Building Trades' Council, which gave so much trouble to the contractors at the time of the laying of the corner-stone of the Post-office last fall. Matters are conducted with a good deal of "diplomacy," if not actual secrecy, and the final outcome will alone show what the actual facts of the case are and how much the new organization amounts to.

The men themselves see that the present state of things is simply killing all building activity here in Chicago, and that there is not enough work to go around. The following statement recently published in one of our newspapers shows, in a nutshell, the condition of things here, in comparison with other cities: —

	WORK IN 1899.	WORK IN 1898.
Brooklyn	$25,459,482	$17,330,881
Chicago	21,137,360	23,246,666
Cincinnati	2,650,879	1,873,070
Cleveland	5,400,664	3,613,837
Detroit	4,002,680	3,915,665

When all this labor trouble is going on it seems idle to talk of erecting new buildings, yet certain schemes are being agitated. One, vague enough for existing conditions, is that in relation to a new station for the Rock Island Railroad, a station to be constructed on novel plans in connection with the elevated tracks on which the road enters the city. There is no definite date for the beginning of such an undertaking, but eventually a large station must come of a necessity. Some preliminary sketches have already been made, but the practical problems confronting the railway officials and architects are many and difficult to solve. The idea is quite a different one from any of the large Eastern stations, being a combination on a large scale of office-building and railway-depot. The plan, so far as has been outlined, contemplates the erection of a ten-story modern office-structure, to occupy not only the full frontage of the present station, but 24 feet along Pacific Avenue now used by teams in delivering baggage. The building in its entirety will cost about a million and a half. The new structure as here outlined depends on the obtaining of an ordinance authorizing the roads to close up Taylor Street. Should this be done, a model and large station on Van Buren Street would be possible.

A competition for a new bank-building for the Chicago National Bank has recently been carried on. The entire building is to be devoted exclusively to banking purposes. There will be three stories in front. The second and third will have a depth of not more than a quarter to a third of the ground-floor, which will have a north frontage of 90 feet and a depth of nearly two hundred. The approximate cost of the building is $200,000. The competition was awarded to Jenny & Mundie, their design being an excellent one of Classic character.

A new theatre to be known as "The Illinois" is about to be built on the site of the old armory on Jackson Boulevard. The cost of the building will be between two and three hundred thousand and in many respects it will be quite a model structure of its kind. It will be devoted exclusively to theatrical purposes. The material will be of stone and polished granite. A large lobby faced with marble and mosaics will lead directly into the foyer, which is of better or rather larger proportions than those in most of our theatres. Parlors and smoking-rooms have been devised and though the building will be of fireproof construction, forty exits have been arranged. As the building has a clear space on all sides the question of lighting and ventilation has been especially well solved. Special attention will be given to the decoration, and it is to be hoped the results will justify the glowing accounts given of it.

The event of the past month has been the opening of our great sanitary canal, which turns our river water with all its drainage back from the lake towards the rivers which drain into the Mississippi. From a reeking, smelling stream the Chicago river has been turned into an inoffensive current, odorless, and at times quite green. Though a twice-told tale, it is interesting to refresh one's memory with the fact that this great engineering feat, this great ditch which connects the Great Lakes with the Gulf of Mexico cost $38,000,000. It has a flow of 600,000 cubic feet in a minute, has a minimum depth of 21 feet, and varies in width from about one hundred to three hundred feet. One is apt to think of it as only being dredged through soft prairie soil, but when one realizes that for fourteen miles it was cut through solid rock, our respect for it increases.

To turn from our great undertaking in scientific engineering to art: The charming exhibits at the Art Institute should be mentioned. The Caxton Club has made a fine display of Whistler's etchings, which of course need no descriptive adjective.

Mr. Herman Murphy has shown the result of his new theory of color in his collection of fifty or sixty paintings, and Mr. Herter has an equal number, in which he riots in color effects. That the Herter pictures are so superbly done is to some a fault, for they lead you into scenes where you feel yourself a third party, and where an audience makes the pictures indelicate.

The young Englishman, Byam Shaw, has an interesting but small collection, the subjects chiefly inspired by the Rosettis. They are very curious, and you wonder who is the queerer — he, that he could paint them, or you, that you can more than half like them. A casual observer strolling through the gallery remarked she thought his name ought to be spelled Buy 'em Pshaw! They certainly are a shock at first sight.

But Birge Harrison has, almost next to this, a collection which is quite normal, and you *know* he is not queer, and you don't think anything about yourself but just enjoy the glorified nature of his landscapes. They are delightful and you will carry an impression of his all-pervading sunlight through a whole week of the worst kind of Chicago weather, fog-bedimmed and smoke-laden.

Last week, in the neighborhood of the Art Institute, a fire in a large wholesale warehouse brought into play a curious feature introduced into the construction of the Public Library. Around the entire cornice of the building every six inches are quarter-inch water-pipes curving downward, and through which water can be turned on, enveloping the entire building in a sheet of running water. Last week when the warehouse just across the way from the library caught on fire, this water-curtain was tested for the first time and proved in every way satisfactory, the building being not even scorched.

Another innovation, though of a very different kind, has been the introduction of a woman into the position of landscape-gardener for Lincoln Park. This woman is Mrs. A. E. McCrea, wife of the late J. F. McCrea, himself a landscape-gardener of some reputation. Mrs. McCrea has had some experience in laying out parks in Milwaukee, St. Paul and Detroit, and is said, further, to have a thorough knowledge of trees and shrubs and their habits.

EXPLORATIONS AT SUSA.

HALF a century has elapsed since Mr. Kennet Loftus, by his brief excavations, directed attention to the archæological importance of explorations on the site of ancient Susa. At that time nothing was known of the ancient and powerful Elamite kingdom of which Susa formed the capital, and little else than the remains of the palaces of the Achæmenian kings were expected. The decipherment of the historical records of the Chaldean and Assyrian empires showed that from the remotest times the great confederation of tribes who occupied the highlands of western Persia and the lowland plains on the right bank of the Tigris had played no inactive part in the earliest acts of the drama of Oriental history; and the attention of scholars was then forcibly directed to the importance of systematic explorations on the site.

The position of the two great tumuli which mark the site of the ancient Elamite capital is of great strategic value, as they protect plains watered by the Karun and Dizful rivers and guard the ranges of mountains which rise step by step to the great tableland of Iran. The larger of the tumuli is about fifteen hundred metres in length, and some eight hundred in its greatest width. The larger mound marks the site of the Achæmenian capital, and at its northern extremity M. Dieulafoy uncovered the apadanas or palaces of Artaxerxes, Memnon and Darius during his explorations in 1884 and 1886. Loftus had obtained several inscribed bricks bearing the names of Elamite rulers contemporary with the Sargonide dynasty, B. C. 721 and 625, but no traces of buildings prior to the Persian age had been found, and many scholars had formed the opinion that the town had been completely destroyed in the terrible siege and sack by Assurbanipal in 640 B. C. The mention of Elamite palaces in Babylonian inscriptions as early as B. C. 1300 and in the later Assyrian times proved that such buildings must have existed. One special mention may be quoted: Kurigalzu, king of Babylon about B. C. 1300, states that he recovered a certain gem of agate "from the palace of Susa, which is in Elam." The obverse of this gem has a dedication by the order of the Babylonian King Dungi. It was no doubt carried away by the Elamites in B. C. 2285 when they overran Chaldea. Other kings also mention these royal residences. The work of Oppert, Sayce, Weissbach and others on the rock and brick inscriptions made it clear that explorations in the older portions of the ruins would produce good results.

On his resignation of his post as director of the Gizeh Museum, M. de Morgan was entrusted with a special scientific mission to make a thorough exploration of the site; the first results are made known to the world of science in his report to the minister of public instruction, and they fully justify the expectations that were formed of the richness of the site. Indeed, it is no misstatement of the facts to say that no explorations in Mesopotamia have produced such astonishing results or opened up so many new problems, not only as regards the historic ages of the Mesopotamian valley, but in what has been entirely wanting — traces of prehistoric times. Those results are due to the fact that the head of the expedition was a skilled and trained explorer, assisted by those who had long served under him in Egypt and were versed in his methods. Of the staff MM. Jequier, Lampre and Gautier had worked in Egypt especially on primitive sites, and Father Schiel, a learned French Assyriologist, joined the expedition at a later period as expert. As Loftus and Dieulafoy had been unable to find any extensive pre-Achæmenian remains in the larger tumulus, work was commenced in a smaller but loftier mound about two hundred and fifty metres to the west. The mound rises to a height of nearly one hundred feet above the surrounding plain, and presented every indication of being a more ancient ruin. On his arrival at Susa in December, 1897, M. de Morgan, who had previously visited the site in 1891, prepared for a thoroughly scientific exploration of the site, and here his previous training as a geologist stood him in good stead, as it had previously done in Egypt. The skilled explorer knows that in all ancient sites, especially in the East, the law of stratification holds good, and that to ascertain the various strata and their ages is the first task, before the more minute examination can be made. To this end M. de Morgan commenced his work by driving a series of tunnels into the mound at varying heights above the plain. By this means he struck a number of strata, which yielded results hitherto not found in Chaldea or Assyria.

Starting with a base-tunnel which revealed a yellow alluvial — no doubt a deposit brought down from the Persian mountains — he pierced the slope of the mound with five tunnels, until the first historic stratum was reached, at a distance of about seven metres below the upper surface of the mound. It was in the lower tunnels that most important discoveries were made in the finding of no less than three strata of prehistoric times. Here, as in all previously-excavated stratified ruins, pottery afforded important data. The first stratum was 10.93 metres above the plain, and showed traces of a civilized people. Much pottery, remarkable for the fineness of its glaze and decorated with painted patterns in red, black and brown, was discovered. The patterns were chiefly geometrical, but some had figures of birds resembling the prehistoric pottery from Nagada, in Egypt, and the early Greek work. In this stratum but few worked flints were found. In the next stratum, 14.30 metres above the base, the pottery was not so fine, mostly vases of rough earth, but the flints became more numerous, and here an important discovery was made. In many places heaps of small flaked flints were found which the explorer, from his Egyptian experiences, recognized as the flint teeth of sickles; and in the upper portion many such fragments were found with the bitumen adhering to them which had been used to seal them into the wooden frame of the sickle. It will be remembered that the Egyptian hieroglyph ma, a sickle, is colored at Medum and other sites as a wooden frame, modelled from the ox-jaw, in which flint teeth are set. Here, then, was a discovery which gladdened the heart of M. de Morgan. He had maintained in his work on "*Researches on the Beginnings of Egyptian Civilization*" that cereal-growing was not indigenous to Egypt, but had been introduced by an Asiatic race, who naturally brought with them the instrument with which to reap the crops. Here, then, in the Susanian plain, one of the greatest corn-growing regions of Western Asia, ample evidence of a great corn-growing population is found. The ancient Chaldean records dating from B. C. 5000, the cone of Entemena and other inscriptions, refer to the corn-wealth of those regions, and Strabo states that their yield was one hundred or even two hundred fold. In the strata above, the remains of these implements were still more numerous, and the teeth polished and worn from usage. Stone maces, one of the earliest prehistoric weapons, began to appear. Rising now to another stratum, 21 metres above the base line, we first find burnt bricks and traces of buildings, but no inscriptions whatever; and, 4 metres higher, the first town is discovered, the remains of the most ancient Susa, which in many respects resemble the lowest stratum found by the American explorers at Nippur, but still no inscribed bricks. Above this, at a depth of about 4½ metres, we come upon the ancient Elamite, or Anzanian, citadel, which was destroyed by Assurbanipal about B. C. 640.

Now, all these strata, presenting evidence of progressive degrees of culture, show clearly what an immense antiquity we must assign to the first settlements on this site, and raise the important question whether we have not evidence of antiquity greater than is discovered in Chaldea. Having ascertained the order of this strata, M. de Morgan entrusted the work of opening trenches to M. G. Lampre.

After passing through two metres of Persian and Arab *débris*, the Græco-Persian level was reached, which, by enamelled vases and coins, may be said to cover a period of about five centuries from the Macedonian conquest to the rise of the Sassanian dynasties — that is, B. C. 330 to A. D. 226. Below this the Elamite stratum was reached, and the remains of walls and pavements of bricks inscribed with the names of Elamite rulers, such as Kudur-nakhunta, Selkhak and Sutruk-nakhunta, were found; and, from the amount of cinders and charred wood, it became evident that this was the palace destroyed by Assurbanipal in his vengeance on Elam. The terrible destruction by fire and the deliberate razing of walls made it impossible to ascertain accurately the general plans, but many discoveries of great archæological importance were made. The walls were of square, kiln-burnt bricks (0.35m sq.) of bright-brown color, those facing the interior being inscribed, so that the walls were covered with lines of writing. Along the walls were found many fragments of enamelled bricks bearing inscriptions or decorative patterns, also portions of bricks with figures of men and animals used to form decorative panels. This mode of decoration had been familiar to us in its highest style in the Achæmenian palaces, as is shown by the splendid enamelled brickwork found by M. Dieulafoy, and now in the Louvre. Its use by the Elamite rulers in the eighth century shows us the source from which the Achæmenian artists derived their inspiration; there are many other indications of this influence of the older Susanian civilization. In the larger rooms the bases of columns were found, but from the large quantity of cinders and carbon around them, it is evident that these rooms had been roofed, like the Persian apadanas. We can now trace this interesting form of construction back to a much earlier period than the Achæmenian age. We have the ancient Elamite halls, dating about B. C. 700, probably earlier, but these reproduce the columned hall of the Kassite period of Nippur, about B. C. 1300. The Kassite, or Cossean, was first-cousin to the Elamite and of mountain origin, and therefore it is not difficult to see, as Sir Henry Layard suggested, the origin of this style in the wood-columned chambers of the mountain-tribes, such as the Bakhtiary or the Yezidis of to-day.

We come now to the most important and astonishing discoveries of the historic period. Assurbanipal stripped the palace as far as he could and wrecked it, but there were certain monuments which escaped removal on account of their weight. Space will permit us to describe only one of these, but its importance justifies us. As we have already said, there was enmity between Elam, or Anzan, and Chaldea from the earliest ages, and, indeed, these border wars form the chief items of history. One of these campaigns of the greatest importance is that of Naram-Sin, the warlike son of the great hero Sargon of Akkad, whose reign is fixed at B. C. 3750. This event was regarded as of the greatest importance, and by it contracts were dated. In the Museum at Constantinople are several contracts found at Tello by M. de Sarzec which bear the date "the year when Naram-Sin placed his yoke on the land of Elam." Of this conquest M. de Morgan discovered a most remarkable record in the ruined Elamite palace. Torn from its place and much injured by fire, the explorers unearthed a large stele of yellow limestone, which stood six feet, six inches high, and about three feet in width at the base. The whole face was covered by an elaborate sculptured tableau containing many figures. The work is most remarkable, both as a whole and in the details, and although bearing every mark of antiquity, may compare favorably with the sculptures of Assyria. At the top of the stele are three solar discs with their rays. Below is a lofty cone representing the peak of a mountain, on the surface of which is cut a long inscription. Before this stands the king, wearing a horned helmet and armed with an arrow or short spear in his right hand, a bow in his left. He wears a rich robe reaching to the knees, and wears sandals. A dagger is thrust into his girdle. His beard is long. The royal warrior places his foot upon a dead foe, while before him another falls wounded and tries to draw an arrow from his breast; and, farther off, another personage is represented, standing with his hands-raised in supplication. The heap of dead beneath the victor's feet in various complicated attitudes is most remarkably drawn and carved. Below the king, mounting some steps, come three ensign-bearers, each with the right hand placed on his dagger, and his left holding the banner. The ensigns are of considerable interest, as they are already familiar to us from the engraved gems of Chaldea, namely, the sacred lance, whip and mace. Below the standard-bearers come the soldiers, variously armed. In front of these are two trees, behind which are the enemy, who are represented as turning round in supplication. From the whole tableau we see that it represents a campaign in a forest region, the enemy defeated and driven to the highest peaks, where they are slain or surrender to the victors. It is exactly the region of the dark pine forest of the hero Khumbaba, described in the Epic of Chaldea.

The question now most important is, Of whose campaign is this remarkable monument a record? M. de Morgan, who appears not to have had the benefit of Father Schiel's expert evidences, regards it as Elamite, but the inscription upon it reveals the astonishing fact that it is a monument erected by Naram-Sin to commemorate his great campaign some time about B. C. 3750. How came it here? M. Maspero and Dr. Schiel seem to think that it was carried away from Chaldea by the Elamites, but considering the great size and weight, this seems hardly feasible. The more possible solution is that the stele had been set up by the Chaldean king either in Susa or in the region. But the Elamite ruler Sutruknakhunta has boldly annexed the monument and inscribed his own name and titles on it. This is, in all probability, the earlier king of that name, who reigned about B. C. 1300, who pillaged many Babylonian cities and carried away statues of the gods.

This is not the only monument of importance found in these explorations. There was also found a large obelisk of granite six feet in height, the four sides of which were covered with a long inscription of some twelve hundred lines written in very archaic character. The text has not yet been published by Dr. Schiel, but it proves to be the record of a Chaldean king named Manistusu, of whom some inscriptions were found at Nippur. For further details we must await Dr. Schiel's report on the inscriptions.

Such, then, is a summary account of these most important explorations. They have traced the history of this city from the remotest ages to well-known historical times. They raise many questions of importance, but chief among these is that of the origin of the civilization of Chaldea. Is it in these settlers of Elam, whose memorials extend back to an unknown prehistoric age, that we are to look for those tribes who, attracted by the rich, alluvial soil of Chaldea, came and settled there and founded Nimrod's kingdom? We look anxiously to M. de Morgan's continued work for an answer to some of these most interesting questions.—*London Times.*

THE ILLUSTRATIONS

[*Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.*]

THE BROADWAY CHAMBERS, NEW YORK, N. Y. MR. CASS GILBERT, ARCHITECT, ST. PAUL, MINN.

THIS eighteen-story building is located upon the northwest corner of Broadway and Chambers Street, New York, overlooking the City-hall Park, and the upper stories command a fine view of the North and East Rivers, of the lower end of New York, and of the harbor.

All the rooms and corridors in the building, excepting only the corridor in the basement story, are admirably lighted by direct natural light.

The building is constructed throughout after the most thorough and scientific system of steel construction, and is absolutely fireproof. The foundations are of concrete and steel grillage.

The first three stories are of dressed granite. Above this, to the thirteenth story, inclusive, the material is of unusually hard brick, especially made for this building, entirely enclosing and protecting the structural steel; thence to the top of the building is brick and terra-cotta. The roof is of semi-vitreous tile, laid in cement.

The building is equipped with the most approved modern mechanical devices to provide first-class mechanical service in all departments. The piping is so arranged as to be concealed from view (so far as possible) in the offices, and yet accessible for inspection at any time. The systems of plumbing, heating, ventilation and electric-lighting have been laid out upon advanced and scientific principles. Toilet-rooms are located upon each floor.

There are four elevators with electric-signals at each story. An independent electric-lighting plant will be provided in the building. A mail-chute, convenient of access, at every floor, is provided.

The interior finish of the corridors will be of marble, having only such woodwork as is necessary at the doors. The corridors will be handsomely decorated throughout.

DESIGN FOR A M. E. CHURCH AT M——. MR. F. E. WALLIS, ARCHITECT, NEW YORK, N. Y.

TOMB OF CARLO MARZUPPINI, IN STA. CROCE, FLORENCE, ITALY.

THIS and the following subject are copied from Grandjean de Montigny's "*Architecture Toscane.*"

TOMB OF H. BASSO, IN STA. MARIA DEL POPOLO, ROME, ITALY.

[The following named illustration may be found by reference to our advertising pages.]

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NOTES AND CLIPPINGS

TURK *vs.* AMERICAN AT THE PARIS EXHIBITION.—The power possessed by the United States has been again exemplified with regard to the approaching International Exhibition in Paris. When the spaces were assigned America insisted on having a far larger area than was proposed by the administration, and after a long debate the demand was agreed to. The United States were placed on the same footing with Russia. The latest example of Western power has been displayed at the expense of Turkey. The palace which the Sublime Porte had erected was to be surmounted by an immense dome, which would no doubt excite much interest. But the nearest building to it was the palace of the United States, and when it was perceived that the American structure would appear insignificant on account of the proximity of its Turkish rival, the Exhibition authorities were compelled to decree that the great dome must be sacrificed. Of late years nobody hesitates to wound Turkish pride, and it might be supposed the Ottoman race was deprived of feeling, but to transform the character of a building at the present time is to run the risk of having the Turkish palace incomplete when the Exhibition opens. — *The Architect.*

Stevens's Lions. — We are glad to find that a number of the celebrated little cast lions, designed by Stevens, and formerly on the guard-rail outside what we may appropriately call the "peribolus wall" of the British Museum, are now to be made use of as finial ornaments for the barrier round the Wellington monument in St. Paul's. This is one of the best and most suitable uses to which they could be put. Some others of them, we have observed, have already been made use of rather well in certain situations in the interior of the British Museum. — *The Builder.*

The Duty on Electricity. — The question whether electricity is dutiable has been brought before Assistant Secretary of the Treasury Spaulding, in consequence of a resolution recently adopted by the Merchants' Exchange of Buffalo pledging themselves to opposition by counsel before the Treasury Department to the levying of a duty upon electricity brought to the United States across the Niagara River. The case is a hypothetical one and comes from Niagara Falls, the Americans there desiring to furnish electricity to persons on the Canada side, while there are companies on the Canada side who want to furnish electricity to people on the American side. — *Exchange.*

The Magnitude of London's Water-supply. — In 1898 the population supplied by the eight companies was 4,478,396 persons within and 1,341,187 without the County of London. These figures are open to question, but they may be taken as approximately correct, and are of interest as bearing on the demand of the London County Council to acquire the control of water-supply. The area supplied is 120 square miles within, and 230 square miles without the County of London. In 1898 the companies supplied an average daily quantity of 204,053,955 gallons of water from all sources. During the last seventeen years the average per head per day varied from 30.32 gallons in 1883 to 35.43 gallons in 1897. The increase has on the whole been gradual, but the supply varies largely in accordance with the nature of the seasons. — *Engineering.*

Rubber Nails. — A German novelty that is being successfully introduced is india-rubber nails of all shapes and sizes for use in work where ordinary nails are liable to corrosion, or where they may set up a galvanic action, or for any one of a large number of purposes where metallic nails are objectionable. These india-rubber nails, which are made by the Hamburger Gummi-Kamm Company, near Hamburg, come in all shapes and sizes. The common form have either countersunk or cup heads, the stems being square and drawn to a point. In color they are a beautiful golden brown. They are very light, but notwithstanding their extreme brittleness can be driven with a hammer into soft woods in sizes up to one inch long without boring a hole for their reception. For sizes from one to two inches long it is necessary to bore holes to start them, or for the larger sizes for their entire length. For withstanding the action of acids and alkalis in commercial chemical processes, as in dyehouses, breweries, bleaching-works, etc., they are excellent. Then, too, being non-conductors of electricity, their uses in building accumulator-cells and other electrical apparatus are many, the nails with perforated heads being designed especially for electric work. It is also suggested that they would be of particular value in attaching copper sheathing to vessels, owing to their non-galvanic action, the corroding power of which action has heretofore been one of the greatest difficulties in this work. It is asserted that they clinch fairly well. For use about explosives, where a spark from a nailhead when struck by a hammer might prove fatal, they are particularly desirable. — *Boston Transcript.*

The Architect as Arbitrator. — At first sight it seems strange that a decision relating to a broker who was appointed to decide in a dispute about the quality of raisins (Pappa *vs.* Rose) should be taken as determining the limits of responsibility of an architect. But in law apparent anomalies are common. That case was again invoked in an action brought by Mr. J. T. Chambers, an architect, against a client for the recovery of fees. The defendant, while admitting the plaintiff's claim, counterclaimed damages for negligence, as it was said materials had been incorrectly measured, and the amount was in excess. The case was heard in the Holmfirth County Court, where the judge allowed the plaintiff his claim and the defendant his counterclaim. The architect appealed. His counsel argued that when giving a certificate an architect was an arbitrator, and so long as he acted honestly he was not liable to an action for damage for want of skill. It was laid down by Chief Baron Kelly, in Pappa *vs.* Rose, that it is for the parties themselves to take care that the person in whose judgment they confide should possess the requisite skill to exercise it properly. Defendant's counsel maintained that the architect was liable because when measuring up the quantities he was a servant of the defendant, and not an arbitrator. Mr. Justice Channell held that if the plaintiff was acting in a judicial capacity an action for mere negligence could not succeed. It did not matter that the person who acted as arbitrator had contracted obligations to one or other of the parties. The plaintiff was only liable for negligence so far as he was the agent for the defendant, but in acting as arbitrator between the builder and the defendant he was not liable. The builder had a right of appeal, according to the contract deed, from the architect's decision, but that did not prevent the architect from being in a judicial position in the first place. The architect's appeal was therefore allowed. — *The Architect.*

The Truth about the Palisade Preservation. — It is idle to throw the odium of this hideous work [destruction of the Palisades] upon the contractors or upon the owners of the land. The odium must rest upon the people of the City of New York. It is a burning shame that in the city which has given the world a new conception of what colossal wealth means, a city in which lavish expenditure for luxury and ostentation has passed every mark set by older communities, the sum required to save the Palisades should not have been gathered by private subscription within the space of twenty-four hours. The everlasting hemming and hawing about combined action by the Legislatures of New York and New Jersey is simply disgusting. If the money were offered to the New Jersey State Government by private individuals, the State would soon enough find means to acquire the land by condemnation. The Brooklyn *Eagle* says the mischief can be arrested at the present point "if the States of New York and New Jersey will unite in the purchase of the heights." This is the kind of thing we have been hearing for years, and it looks as if we were going to keep on hearing it when the last bit of the rocks which once were the Palisades is about to be blown up to be made into paving-stones. "It is given out," says the *Eagle*, "that less than a million dollars will buy the entire line of cliffs, nearly twenty miles long," including so much of the land back of the edge that some of the purchase money could be recovered by the sale of building sites, if it were decided not to use the whole as a park. What a magnificent opportunity is here presented for one of New York's millionaires! As we have said, there ought to be no difficulty in collecting the money by subscriptions from a great number of New York's wealthy men; but if this is not done, what a glorious chance there is for a single one of the great millionaires of New York City! To have saved from utter destruction the noble cliffs which have been the most unique feature of New York's river scenery, to have one's name for ever associated with a great park lining the west bank of the Hudson for twenty miles, and facing the metropolis of the New World, would be an immortality which any man might cherish. Whoever should do this will put an end to what it is mild language to designate as a disgrace to American civilization; and at the same time he will build for himself "a monument more lasting than brass," and keep his memory green to the latest generations. — *Baltimore News.*

St. George's Tower, Liverpool. — We much regret to hear that the Liverpool Town Council have, after all, voted the destruction of St. George's Tower and spire by a majority of 58 votes to 43. It was hoped that the tower was saved, but the counsels of stupidity appear to have prevailed. The detriment to the architectural appearance of the neighborhood may be compared to that which would be caused in London by pulling down St. Mary-le-Strand, except that the case is stronger for the Liverpool erection, because it occupies a more central position, is in the way of no traffic, and, as Sir William Forwood mentioned, it marks the site of the ancient castle of Liverpool. It is to be pulled down for purely commercial reasons; "the site was valuable," as one councillor frankly stated. Among those, besides Sir W. Forwood, who defended its retention in the discussion were Alderman Radcliffe — who moved that the question be postponed, Alderman Paul, Mr. Willink (the architect, and recent President of the Liverpool Architectural Society), Mr. Lister, and Alderman Grindley, whose names should be recorded as having done their best to prevent a fine erection being destroyed. — *The Builder.*

Reforesting Pennsylvania. — The work of reforesting Pennsylvania has been well begun. Thus far, 60,000 acres at the head-waters of the principal rivers have been purchased by the State, and 40,000 more will soon come into its possession. Most of the land purchased has been denuded of merchantable timber, the maximum price of $5 per acre fixed by the Legislature barring the purchase of more valuable lands. This limitation may not be a misfortune, however. Much of the land acquired has a young second growth that will make valuable timber hereafter; and while the work of protecting the watersheds may proceed more slowly than if timbered land could be obtained, a lesson in care of forest-lands will be taught, and a greater amount of land will be secured through the available appropriation. The growth on the State lands is to be carefully fostered, one of the plans being to cut a protecting lane around the State's land, to bar out neighboring forest fires. — *N. Y. Evening Post.*

An Engineer's Observations in China. — An American engineer, Mr. W. P. Parsons, has given an account of his experience of a railway survey in China. The line proposed was about seven hundred and forty miles in length. The Chinese Government allowed the party about three hundred soldiers as a protection, and the same number of coolies were required. It was also necessary to have pioneers carrying placards warning the peasants against interfering with the surveyors. The line was surveyed in 77 days, or about ten miles a day, but as most of the country traversed was level, the work was not difficult. The engineers made it a rule never to sleep at an inn, and they spent the nights at the public examination-halls, wayside temples or in tea-warehouses. They met with numerous pagodas of about one hundred feet high which were built of solid masonry, but they must have been intended as landmarks or memorials, for it was impossible to enter them. The party found many houses on the river banks which were built on slender poles driven in the mud. The river was subject to floods of 50 or 60 feet, and miles of the houses were recently destroyed and about ten thousand lives lost, but the houses have since been rebuilt in exactly the same place and manner. There were many ancient arch-bridges with perfect cut-stone *voussoirs*. The spans were of 50 or 60 feet, and in one place where the river had for 100 years flowed through a different bed, leaving the bridge high and dry, the Chinese continued to pass over it, climbing up at one end and down at the other. A curious wooden cantilever bridge of 70 feet span was seen, which was made of successive corbels overlapping each other and knee-braced at the piers. The corbels were built out far enough for their opposite ends to be connected by wooden girder-beams. The road was paved with stone, but the timber was so much decayed it was unsafe to load the bridge heavily. — *The Architect.*

An Inhospitable Inscription. — Just upon the boundaries of Bedfordshire and Hertfordshire formerly stood a rambling old farmhouse. The living-room was long and low, and on the centre-beam that went across the ceiling was inscribed this legend, "If you are cold, go to Hertfordshire." This seemingly inhospitable invitation was explained by the fact that one-half of the room was in one county and one-half in the other. The fireplace was in Hertfordshire. — *Exchange.*

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IF any of our subscribers have been annoyed by delay in the delivery of our issue for last Saturday, we desire them to understand that it was merely one of the incidents attending the late floods in New England which have prevented the paper-mills from filling their orders with customary promptitude. The same mischance obliges us to be somewhat late this week and also to use a different quality of paper.

THE great strike of the building-trades in Chicago has already resulted in an almost complete suspension of building operations, but the union leaders are still defiant and aggressive, and threaten to order strikes on all buildings in New York, Boston and elsewhere in which Chicago contractors are interested. Meanwhile, the contractors, who have no difference with the men as to wages, or length of working day, but who simply claim the right to employ or discharge whomsoever they choose, and refuse to submit to the limitation of the amount of work that a man shall do in a day, or to promise not to use non-union-made material, or to use only such machinery as the unions permit, seem to be equally determined to hold out against an arbitrary tyranny which, as they say, has steadily reduced the total amount of building in Chicago until, last year, it was less than half of what it was in 1890, and much less than one-third of what it was in 1892, while all the other American large cities have shown great gains during the decade; in New York, Cleveland, Cincinnati, Minneapolis and St. Paul the increase in building in 1899 over 1898 being from fifty-four to seventy per cent.

ONE of the straws that indicate the approaching downward tendency of prices of structural iron is, perhaps, to be found in the circulars, several of which have lately found their way into architects' offices, announcing that various contractors for structural ironwork "have in stock" large quantities, amounting in some cases to many thousand tons, of I-beams, channels, angles and other shapes used in construction, which they will sell at prices which will be quoted on application. As these contractors do not themselves manufacture beams and angles, they must have bought them of some rolling-mill; and, as they do not, as a rule, carry on the business of dealers in materials, in addition to their contracting and engineering work, the natural inference is that they must have accumulated, in anticipation of their needs as contractors, a quantity of material which, according to present business prospects, they are not likely to require; and, as prudent persons, their managers wish to take advantage of present prices, which are still high, and get rid of a surplus stock which they think they can replace later, when it is actually needed, at lower rates. All this is a matter of simple commercial wisdom, for which the stockholders of the corporations concerned have reason to be grateful; but it is also evidence that the ablest men in the business are so sure of being able to buy structural iron for less money in the future than it is worth now that they are willing to sell their present stock, and take the risk of being able to replace it without delay or loss when it comes to be needed in the course of their contracting work. We do not, naturally, suppose that the contractors sell, as yet, at less than the mill prices, for the fact that they can deliver at once would make transactions with them more desirable than contracts with the mills, which generally refuse to set any time for delivery, but the fact that they are selling, instead of buying, the materials that they use in their current business, is extremely significant.

AN illustration of the great advance which has taken place in the cost of certain building materials, and, incidentally, of the troubles which such violent fluctuations in prices bring to contractors, is to be found in the failure of the Armstrong & Bolton Company, which held, until its failure, a contract for the steam-plant, elevators, electric-lighting apparatus and cooking appliances of the new Tombs Prison, in New York. The contract price was something over ninety-three thousand dollars, and a bond of the United States Fidelity and Guaranty Company for seventy-five thousand dollars was given as security for the fulfilment of the contract. After the award of the contract, the prices of materials for this sort of work began to advance, and, by the time the building was ready for its fittings, the cost of some materials had doubled. Before a thousand dollars' worth of work had been put into the building, the contractors made an assignment, and the Fidelity Company, as surety, was called upon to complete the contract. New bids were advertised for by the Company, and the lowest received was nearly seventy-five thousand dollars more than the contract price, while some of them are said to have exceeded it by more than a hundred thousand dollars. The Fidelity Company can only be held for the amount of its bond, but appearances indicate that it will have to lose the whole of its seventy-five thousand dollars as a tribute to the ingenuity of industrial combinations.

THE death of William Butterfield removes from the English architectural world almost the last of the great artists who made the middle of the century illustrious in professional history. Although Butterfield's work seems to us at this day a manifestation of an eccentric fashion, which only survived long enough to produce some of the worst horrors that ever passed under the name of architecture, he was not responsible for the performances of his imitators, and, even now, the professional observer is attracted to his buildings by the pure taste, and artistic feeling, with which he pursued an ideal too high, or, at least, too easily perverted and vulgarized, to hold a permanent place in modern architecture. The best known of his buildings are, probably, Keble College, at Oxford, and All Saints' Church, in Margaret Street, London, both of which, in the days of architectural polychromy, were objects of pious pilgrimage on the part of students, and still afford a suggestion of what might be done with color to heighten artistic expression in architecture; but other buildings in London and Oxford, as well as at Rugby and Salisbury, show the same artistic inspiration, and, we may say, the same inadequacy of the materials used to realize the inspiration.

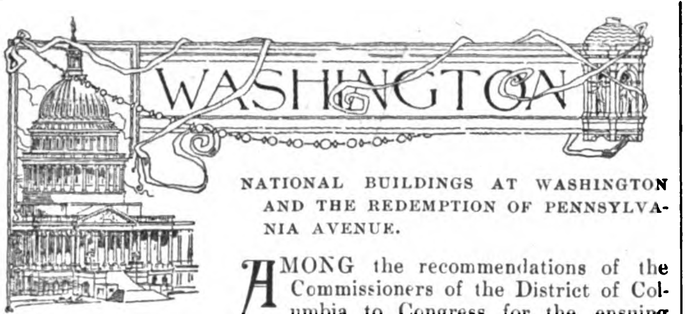
YALE University has been enabled, by the generosity of four persons, to establish a School of Forestry, the plans for which have already been laid out by President Hadley. The late Prof. O. C. Marsh bequeathed to the University a large estate in the neighborhood, to be used for the purposes of a school of botany. Naturally, the same estate can also be used for instruction in forestry, and it will be so used for the present. To architects, who have seen the white pine of the North-eastern United States, the most valuable timber in the world, almost disappear from the market, the importance of furnishing the community with men trained in the conservation and development of forest property is painfully evident, and there are signs that the owners, even of spruce lands, which it has been the fashion to denude of every stick, are beginning to understand the advantage of making them moderately, but permanently productive, and, for that purpose, will soon desire the assistance of educated foresters; so that the graduates of this and other university schools of forestry should not lack employment for a time. Meanwhile, it is not impossible that the vast tracts of land extending from Maine to Virginia, which were once covered with an extremely valuable growth of white pine, but are now worthless, may attract the attention of rich families or corporations. If the Single Tax Leagues would give guarantees against attempts to confiscate the money put by land-owners into improvements, no investment would be more steadily profitable, or more advantageous to the local population, as well as to the community at large, than the purchase and scientific utilization, on a large scale, of the almost barren wastes which once formed the wealth of New England, New York, and New Jersey, and which still, properly treated, would be worth more than all the gold-mines of the West.

THE Report for the past year of the Boston Manufacturers' Mutual Fire-insurance Company contains a retrospect of the work of this and similar companies for the past fifty years which is of great interest, as showing what can be accomplished by a system of insurance which provides means for lessening the risks against which it insures, instead of betting on the occurrence of casualties which it does nothing to prevent. The result of the application of the new method is truly remarkable. The best risks, probably, that ordinary companies insure are city dwelling-houses. The entire destruction by fire of a city dwelling is almost unknown, and, although fires occasionally occur in them, the loss rarely amounts to more than a year's premium on that particular policy, so that the business is mainly profit. On the other hand, manufactories, particularly cotton and woollen mills, are exposed to enormous dangers. A bit of hoop-iron, or a gravel stone, in a cotton-bale strikes fire readily at the contact of the pickers; a drop or two of oil will produce spontaneous combustion in cotton or cotton goods; many dye-stuffs, like picric acid, for example, are either highly explosive, or may produce spontaneous combustion in cotton or woollen goods; the air in such mills is always full of fibrous dust, which carries flame like lightning over a room, while the same dust settles in heaps on all inaccessible surfaces sufficiently level to hold it; and not only are great quantities of combustible materials necessarily stored in and about the mills, but every mill maintains huge boiler-fires, with heaps of soft coal, very liable to spontaneous combustion, and steam apparatus, usually including drying-rooms heated to a high temperature; yet the cost of insurance of a cotton mill in one of the mutual companies has been for the past four years about one-fourth of the premium on a city dwelling-house, and about one-twentieth of the premiums charged by the ordinary insurance companies on manufactories which are not included in the mutual system, and in which, in consequence, no attempt is made to reduce the hazard. Considering that the fire-losses in this country are more than one hundred million dollars a year, and that the community pays companies, in premiums, about two dollars for every dollar that it receives in the way of indemnity, it is evident enough that a saving of three-fourths, or, still more, nineteen-twentieths, of the premiums paid is quite as much of an object to the owners of insurable property as is the prevention of fires. Business-men are apt to say, in speaking of fire-losses, that they are the concern of the insurance companies, as if the payment of premiums were, like taxes, something inevitable, which no effort on the part of those who paid them could mitigate; and it must be confessed that the conduct of the underwriters has, in times past, encouraged this view. Now, owing, undoubtedly, to the example of the manufacturers' mutual companies, underwriters generally are beginning to adapt the premium to the hazard in a feeble way, and we may hope that, in the future, it will somehow be made the interest of all persons whose property is insured to use efforts to reduce the risk of its loss, and thereby benefit the community as well as themselves.

A NEW sort of artificial stone, which promises to be of value, is made in Belgium, at Uccle, near Brussels. Some one seems to have reflected that natural sandstone has been, probably, compacted by great pressure, combined with heat, and the new process is based on this theory. The actual manufacture is very simple. Eighty parts of rather coarse sand, washed perfectly clean, and well dried, are mixed with twenty parts of hydraulic lime, in fine powder, and also perfectly dry. By mechanical means a thorough mixture of the materials is effected, and the mass is then thrown into an iron box, which is immersed in a boiler, full of water, and capable of being hermetically sealed. After putting on the cover of the boiler, heat is applied, and the whole kept for seventy-two hours at a temperature of one hundred and sixty-five degrees Centigrade, which gives a pressure of about ninety pounds to the square inch. The iron box is then removed, cooled and opened, and in it is found a block of artificial sandstone, similar in all respects to natural sandstone, but more uniform, and stronger than any except the very strongest sandstones, of the Potsdam type. When first taken from the box, the stone is so soft that it can be cut with a knife, but it soon acquires its full hardness. Besides being hard, it is very compact, and will not absorb under any circumstances more than six or seven per cent of water, even after long drying. The cost of the new stone, ready for use, is said to be, in Belgium, two cents per cubic foot, and, at such a price, it ought to have a large sale. With us, where distances are great, very little stone fit for use in building can be had for less than seventy-five cents per cubic foot in the great cities, and in all those on the coast, as well as throughout the Gulf States, it should be very profitable to make stone, as required, at the site of any new building, particularly as ashlar blocks and other plain pieces could be moulded in the making, at a great saving of expense.

EVERY one has an idea that the manufacture of iron is carried on in the United States on a very large scale, but few people probably know how colossal are the furnaces that are employed in the American establishments, which now turn out iron at a rate which enables them to undersell the European iron-masters in their own market. The National Steel Company is just completing three blast furnaces at Youngstown, Ohio, each of which is about one hundred and ten feet high, and twenty-two feet in diameter at the bottom. To produce metallic iron from the ore, a blast furnace is filled with pieces of iron-ore, coal or coke, and lime. The coal, charcoal or coke, as the case may be, is lighted at the bottom, and the draught is increased by blowing air into the lower part of the furnace, through "tuyères." Usually, the air blown in is heated, before it enters the furnace, by the waste heat of the furnace itself; and the result of the operation is to reduce the mixture, a pool of melted iron collecting in the bottom of the furnace, while a "slag," or glassy compound of the lime with the earthy substances of the ore, floats on the top; the melted iron being drawn off from the bottom by "tapping" the furnace. In the Youngstown furnaces, the hole for putting in the ore and coke is ten feet in diameter, and each furnace is equipped with an engine of five thousand horse-power, which forces into it sixty thousand cubic feet of air per minute.

WE have before spoken of the two gigantic ice-breaking steamships which the Russian Government proposes to put in service, one in the harbor of Cronstadt, and the other and larger one on the fresh-water lake Baikal. The Cronstadt steamer is already completed and in use, and the results accomplished by it seem to have surpassed even the expectations of its designer, Admiral Makaroff, of the Russian navy. The total measurement of this powerful ship is nearly fifteen thousand tons, and it is capable of a speed of sixteen knots an hour. Four screws are used, one of which is placed in front, just behind the ice-breaker, so that its motion may throw out of the path of the vessel the pieces of floating ice, which would otherwise collect under and around the hull. The propellers are of great strength, to resist impact on masses of ice, and the entire vessel is very strongly built, the hull containing no less than forty-eight watertight compartments. On its way from the builders' yard to its station at Cronstadt, the steamer ran through solid ice, from nine to ten feet thick, at the rate of two and one-half knots an hour, and in ice thinner, but sufficiently thick to form a solid sheet on the surface of the sea, it moved easily at the rate of seven knots an hour. After reaching Cronstadt, it was sent to the aid of five steamers which were frozen fast in the ice near by, and easily broke its way to them, and towed them through thick and solid ice to their destination. The value of such a craft in waters like the Baltic is shown, as *La Revue Industrielle* points out, by a recent occurrence, where a steamer on its way from Canada to England was caught in the ice in the Gulf of St. Lawrence and kept there for two months, coal and provisions being carried to it only with great difficulty.



WASHINGTON

NATIONAL BUILDINGS AT WASHINGTON AND THE REDEMPTION OF PENNSYLVANIA AVENUE.

AMONG the recommendations of the Commissioners of the District of Columbia to Congress for the ensuing year is an urgent appeal for an appropriation to give Washington a municipal building, the District offices now being in rented quarters, which have become, with the growth of the city in late years, too congested for the proper expedition of an ever-increasing business. Naturally the discussion of this matter has brought up the question of available sites.

It has been proposed in committee, and I think a bill has been presented, to provide the necessary room by extensive alterations and additions in the old court-house in Judiciary Square. This arrangement meets with strong opposition from both the executive and judiciary branches of the District government on various grounds, and has developed antagonism on the part of the citizens to further governmental encroachment upon the area of the public reservations of Washington. It is maintained that the District offices should be more centrally located, and on the score of necessary outlay it is urged that a more desirable site may be purchased and a separate building erected at about the estimated cost of the first proposition, and Pennsylvania Avenue, in the neighborhood of the new post-office, is preferred as the most central and convenient location. A very energetic campaign has been conducted by several of the foremost journals in favor of this plan. Interviews with distinguished members of Congress and other people of note, together with much general discussion of the topic, have elicited and developed a consensus of public opinion favoring Pennsylvania Avenue, not only for the proposed new municipal building, but as the right place for all future expansion of governmental building in Washington.

Widespread interest in this broader bearing of the question has been brought to light within the last weeks. The question of the possible redemption of the most important as well as the most beautiful street of Washington from its present squalid unseemliness is again before Congress. Within that body there is evidently a strong party which advocates the immediate acquirement by the United States of the whole south side of the avenue from Fifteenth Street, that is, from the Treasury to the Capitol, or rather, to the Botanical Gardens.

The broader proposition, to include in this sequestration all ground south of the avenue to the Mall, has also a good following. This would extinguish all private ownership between Pennsylvania Avenue and the handsome grounds about the Agricultural Department, the Smithsonian, etc.

A glance at the map will disclose, without further argument, the virtues of this scheme from the point-of-view of beautifying the capital city. On other grounds the idea will commend itself, the quarter in question being vile and unsanitary, a standing menace to the public health and morals.

However the larger question may be determined, there can be no two minds about taking the whole south side of the avenue and eliminating the ridiculously mean structures which now line what should be a stately approach to the Capitol. The ground thus acquired would be gradually occupied by new public buildings as the need for them may arise, and these would be set in broad and stately grounds. The proposed new departments of government would be housed in consonance with their dignity; the older ones would find ample space for the expansion which the nation's growth demands.

Linking the great western group of public buildings, the Treasury, the White House and the State, War and Navy Building, to the noble eastern group of the Capitol and, behind it, the new Library of Congress, which from a commanding eminence overlooks the avenue, there would then stretch a chain of dignified monumental buildings in the adequate setting of generous open spaces. To the adornment of these would be devoted the greatest conceptions of the allied arts of building. Than the creation of great public monuments there can be no nobler expression of a nation's dignity and greatness.

Here is a field for the development of the best we have to offer our own people and the world in art. Here many architects and sculptors and landscape-artists would find freest utterance for the inspirations of their genius, and here, in their turn, the mural painters and the noble army of workers in the applied arts might seize the dreamed-of, longed-for chance to dare and do.

The thing is taking form. It is no mere vision of possibilities. The Senate has directed the Commissioners to ascertain and report upon the approximate cost of acquiring the entire south side of the avenue. The entire cost will be found to be insignificant as compared with the enormous advantages to be gained. The Government, considered as a capitalist in search of a good investment, would find here, it may easily be shown, one of the first class.

In thus grouping the national buildings, the Government becomes the beneficiary of its own improvements, and, as a secondary consideration, the city profits most by that means. By now buying enough land to provide for the needs of the far future, the United States will be practising an incalculably great economy.

The treatment of each national building as part of a well-considered *ensemble* needs no advocacy with the readers of this journal, and perhaps the people at large have learned much of what this method yields from the results at Chicago in 1893, and from later splendid achievements of combined artistic intelligences.

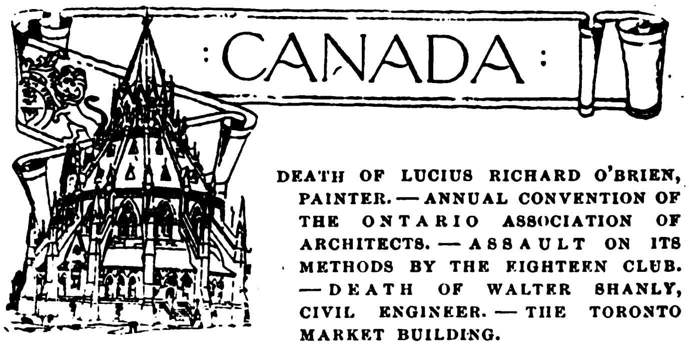
The present project is conceived on broad lines, befitting the national character. In connection with it, the writer of these paragraphs has ventured to suggest, in one of our journals, that Congress would do well now to call to its aid, in consideration of a question of such national importance, the best professional intelligence the country affords, and to invite eminent architects, sculptors and landscape-artists to coöperate in studying a treatment of the ground in question commensurate with the greatness of its intended purpose, a treatment on lines within which from time to time the national buildings might increase as needed.

Homogeneity would be thus ensured. There would be no more aberrations. On the point of style we are already committed, the national public buildings of Washington being all of a more or less well-defined neo-Classic treatment.

The first thing wanted is to determine the general lines of a plan which will ensure consonance and an harmonious *ensemble.* Within these broad limits there may be ample space for the demonstration of whatever great individuality the womb of time may hold for us.

The map best shows the scope of the project. This massing of the public grounds, to stretch unbroken from the President's house to the Capitol, with the splendid thoroughfare of Pennsylvania Avenue as its northern border, where will stand, each in its broad grounds, great monuments of architecture and sculpture, with its southern limit the beautified banks of the Potomac, whose hither shore is about to be connected by a memorial bridge to the hills of Arlington, where sleep our soldier dead, offers an occasion for study and labor, a field for achievement worthy of the great days of art.

Of this kind was the dream of Washington for the nation and the city whose father he was.



:CANADA:

DEATH OF LUCIUS RICHARD O'BRIEN, PAINTER. — ANNUAL CONVENTION OF THE ONTARIO ASSOCIATION OF ARCHITECTS. — ASSAULT ON ITS METHODS BY THE EIGHTEEN CLUB. — DEATH OF WALTER SHANLY, CIVIL ENGINEER. — THE TORONTO MARKET BUILDING.

THE death of Mr. Lucius Richard O'Brien makes a gap in the art-world of Canada that it will be difficult to fill. An unprejudiced and qualified critic regards the works of the late artist as those of the first painter in Canada. His preference was for landscape rather than figure subjects, and in this it is not saying too much to remark that he was head and shoulders above any other artist in the country. He was a son of the late Lieut.-Col. E. G. O'Brien, and, born in Canada, was educated at Upper Canada College, Toronto. His genius showed itself at an early date and he soon decided to follow art as a profession. He leaves several well-known pictures to attest his skill. Two views of the City of Quebec adorn the walls of Windsor Castle, especially ordered by the Queen. Mr. O'Brien, while enthusiastic about his art, was entirely free from the petty jealousies that characterize so many artists. He was a very genial man, with a kind word for all and always anxious to help deserving aspirants. To his efforts principally are due the establishment of the Royal Canadian Academy, founded in 1880 by the Marquis of Lorne and Princess Louise. He was elected its first president and held the office for ten years.

The Ontario Association of Architects held its Twelfth Annual Convention in Toronto on the 16th and 17th of January. Seventeen members, half of whom were the officers and members of the Council, met at the offices of the Registrar and they were reinforced by eight members of the Eighteen Club. It was felt by all the members of the Association present that the crisis in their affairs had arrived and that this convention would practically settle the question of the existence or extinction of the Society. The President's address was simply a statement of what he would suggest as means towards improving the condition of the Association, and the Report of the Registrar contained little else than a notice that the two or three schemes the Council had had on foot during the year had proved failures. The principal business before the Association was the "Report of the Consulting Committee," which committee had been formed at the last convention to report on suggestions made by one member of the Association for the improvement of the Association. The discussion on this proved most interesting and instructive, but the feature of the proceedings was that a member of the Eighteen Club (the young architects') was invited to give his opinions, and, by special request, read a report that the Club had prepared, showing wherein, in the opinion of the Club, the Association had failed to interest the younger architects of the Province and wherein it might be made of value to them. Some of the officers of the Association have a decided objection to what they call "destructive" criticism, forgetting that it is often necessary to pull down before you can rebuild; but this report voiced so well the contentions of all those who have objected to the management of the successive councils and the policy they have persistently followed, to the great injury of the Association, that, being made to swallow it, the members of the Council and officers "sat up" as they had never sat up before and declared themselves to be of the opinion that the Eighteen Club was right and they ought to begin to run the Association on entirely different lines from those of the last twelve years. This introduction to the meeting of the representatives of the Eighteen Club has probably saved the life of the Association.

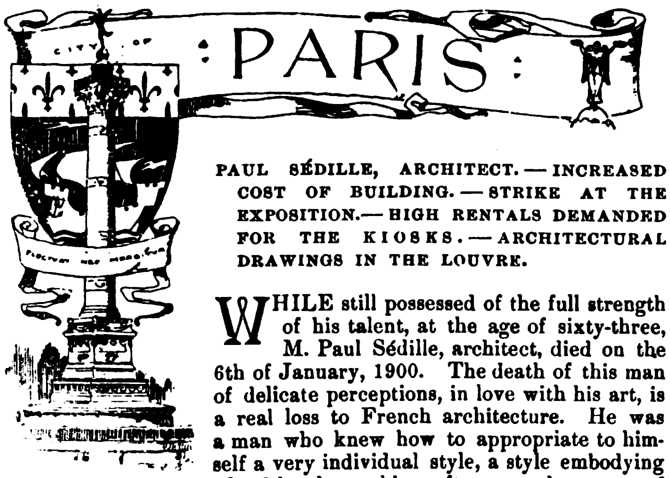
The Eighteen Club felt that the Association had been working too much in the interest of the architect rather than in that of architecture. "A more or less elaborate system of examinations had been instituted" without the provision of means for educating the student to enable him to pass. The charter was a hindrance, because many really qualified men who would like to join the Association would not care to submit to an examination by their equals and fellow-practitioners. At conventions much of the energy that had been expended in preparation of papers to be read was "puerile and wasteful." And one glaring instance where the Association had failed was that it had allowed the Ontario Society of Artists to get up an "Arts and Crafts Exhibition," whereas in other cities it was the *architects* who were the prime movers in such a matter; but the Ontario Association had remained quiet and allowed the artists to do their work for them. The conventions ought to have included the discussions of such matters rather than useless papers and papers by amateurs, and "if the Association had been in touch with what was going on in the architectural world, it would have made some steps to obtain for Toronto the circulating exhibition of the American Architectural League, rather than leave it solely to the committee of a small club of young architects." The Eighteen Club also found fault in the fact that the Association, since its organization twelve years ago, "had done nothing to improve the attitude of the architects and the public to each other," and this, I may add, is the fundamental error. The representative of the "young architects" then went on to suggest that the energy of the Association be devoted for the present entirely to education — that architects will bind themselves to take as pupils only such as agree to take the course of education laid down by the Association, all thoughts of obtaining legislation being put in the background for some few years to come. Some very sensible remarks followed as to the course of education thought advisable, while the suggestion of giving medals or starting a travelling scholarship was scored as being an addition to the "farcical side of the Association, to do so before providing the means of education." Certainly nothing could have been more childish or unbusinesslike than the "travelling scholarship" scheme and the way it was carried out. And, as the Registrar reported, "the effort did not meet with success."

The discussion that followed was, as I said, very interesting. The thin-skinned ones objected to the "destructive criticism," but the more manly, at last, acknowledged that they had erred. They had worked very hard, no one knew how hard had been their work, but they had expended their energies in a wrong direction. Of course there were some who could not, or would not, see that there was any mistake made, but this was only to be expected; these trotted out their time-worn notices of motion with regard to the "establishment of a tariff" and "the placing of a mark of distinction upon a certain number of houses approved for excellence," whatever that actually means. A committee was appointed to confer with representatives of the Eighteen Club on practically everything that concerned the Association, an admission that now only by concerting with the younger architects could the Association expect to save its life. The best possible step the Council could have taken would have been gracefully to hand over the Association's affairs to the Eighteen Club and for the Association to elect members of the Eighteen Club only to the new Council, had it been possible. It is to be hoped, however, that the Eighteen Club's hint as to the quality of the papers read at the conventions will be taken into consideration before the next convention and that this meeting will prove to be the last at which "sickly" papers are in evidence. The election of officers and council at a meeting in which every other man was a member of the Council, of course, could not be expected to result in any such radical change as is necessary, but the Association has obtained a new lease of life for one year, and with the shaking up it has received it is just possible some good may be accomplished.

Mr. Walter Shanly, the well-known civil engineer, died at Montreal on December 17, last. His name is well known in the United States, for he was connected with many engineering works there. The Beauharnois and Welland Canals and the Hoosac Tunnel are portions of his work. Besides engineering, Mr. Shanley took a lively interest in politics and was a member of the old Parliament of Canada from 1863 until Convention, and was returned three or four times to Parliament since that event. He was born in Ireland in 1819 and came to Canada about the year 1836.

The new Market Building at Toronto, which is being carried out at a cost of $156,000, or nearly fifty thousand less than ought to have been provided for it, is just now furnishing matter for official investigation that excites considerable interest. A company that has the contract for the construction of the iron roof refuses to build the roof on the piers provided for it, unless relieved of all responsibility. The company indignantly repudiates the idea that its refusal is a ruse for the purpose of delaying the completion of the contract while the architect stands up for the sufficiency of his piers.

It will be remembered that this Market Building was the subject of a competition, for which only five sets of designs were submitted. The "experts" to whom the plans were submitted wished to reject them all on the ground that none of them could be properly carried out for the money. The competitors were allowed by the City Council to prove, by means of bona-fide tenders, that they could carry out their designs for the sum. And the "experts" were pressed to give an opinion as to which of the designs they would recommend, supposing they could be built for $150,000. They objected to the specifications submitted, and, refusing to take any responsibility, mentioned the design they thought most suitable. The Council accepted the design and entered into contracts for its execution. The roofing company is now causing this serious annoyance; an investigation is being held but it is to be hoped that the result may sustain the architect. The architects of the city as a body held aloof from the competition, because they knew that success in it could only result in endless worry and trouble. The temptation, however, was too strong for some of the younger firms, and the successful firm is getting its first instalment of worry. It is just another case of the city authorities fixing the amount they will spend and then trying to obtain a more costly article at their own figure.



PARIS

PAUL SÉDILLE, ARCHITECT. — INCREASED COST OF BUILDING. — STRIKE AT THE EXPOSITION.— HIGH RENTALS DEMANDED FOR THE KIOSKS. — ARCHITECTURAL DRAWINGS IN THE LOUVRE.

WHILE still possessed of the full strength of his talent, at the age of sixty-three, M. Paul Sédille, architect, died on the 6th of January, 1900. The death of this man of delicate perceptions, in love with his art, is a real loss to French architecture. He was a man who knew how to appropriate to himself a very individual style, a style embodying classic elements, but refined by the seeking after a modern note of individuality.

Paul Sédille was born in 1836, and entered the École des Beaux-Arts in 1857. In 1876 he was the laureate of the grand medal of the Société Centrale, awarded for excellence in private architecture, according to the terms of the foundation of MM. Sédille père and Lesoufaché.

He himself in 1878 established a medal intended to recompense the art industries, in which he was always much interested and upon which he had, as writer of the jury's findings, prepared several remarkable reports. Readers of the *American Architect* have been able to appreciate the charm of the criticisms and æsthetic appreciations which he contributed to this journal some fifteen years ago. He was also author of a certain number of publications on modern architecture in England, modern architecture in Vienna, monumental ceramics, etc. The most important of his works at Paris is his construction of the great department-store "au Printemps." He did a large amount of private work — city houses, country villas and châteaux, and was entrusted with the construction of the basilica of Jeanne d'Arc, at Domremy.

In 1878 he drew attention to himself at the Universal Exhibition by his ceramic composition for the entrance of the Beaux-Arts department, and at the Universal Exposition of 1889 he was appointed head of the Service of Installation. At this epoch, having the honor to be under his orders, I was able to appreciate his conscientiousness and his delicacy as an artist. With what care did he purify the lines of his decorative compositions, and what painstaking skill did he not bestow on their smallest detail. A very able draughtsman himself, he astonished us by the sureness of his pencil and the charm of his sketches.

By nature an artist, he turned his extremely refined tastes to all the manifestations of art, poetry, painting, music. The real nature and character of the man is well expressed in the device which he had ingeniously constructed from the initials of his own name, "*Pulchra Sequor.*" In fact, he followed the beautiful in everything, and this seeking was made easy for him by the ample means which he possessed, whereby he was allowed the possibility of satisfying his tastes in matters of luxury and elegance. His own house was a very marvel of decoration, rich without being extravagant, wherein

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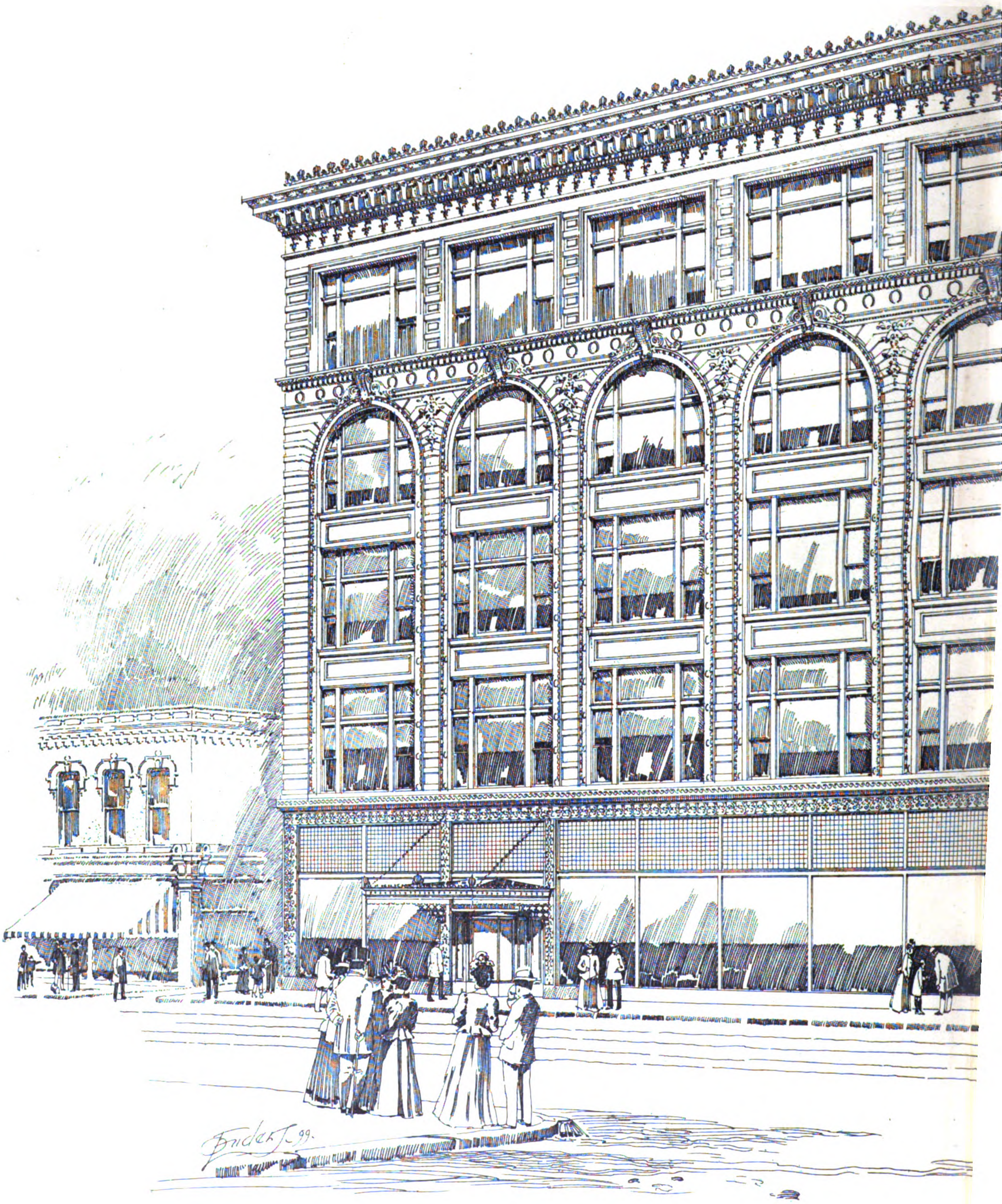
·DES MOINES·IOWA·

LIEBBE NOURSE & RASMUSSEN
~ARCHITECTS~



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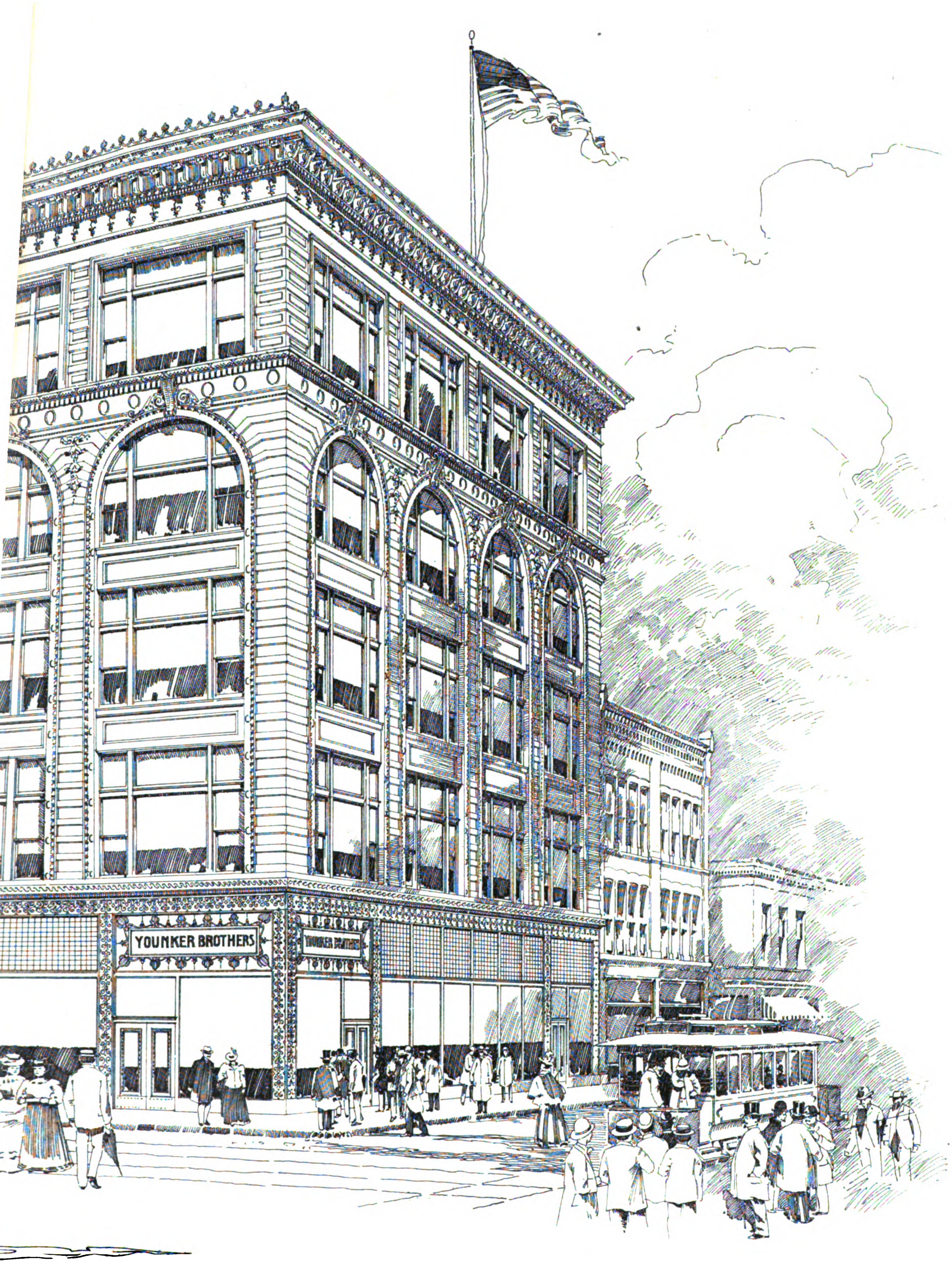

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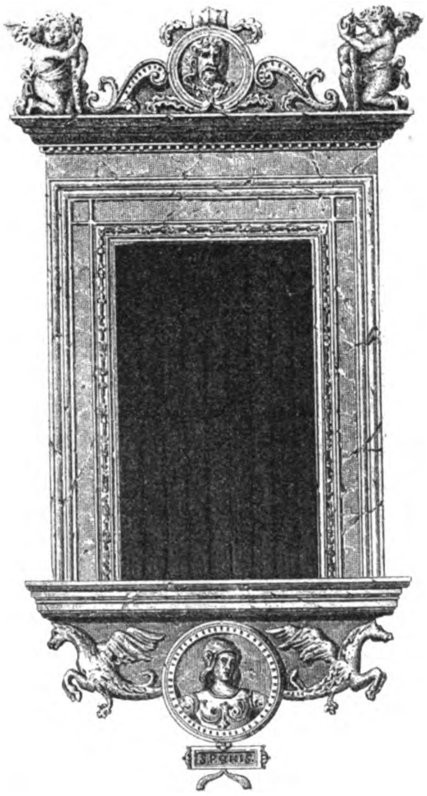

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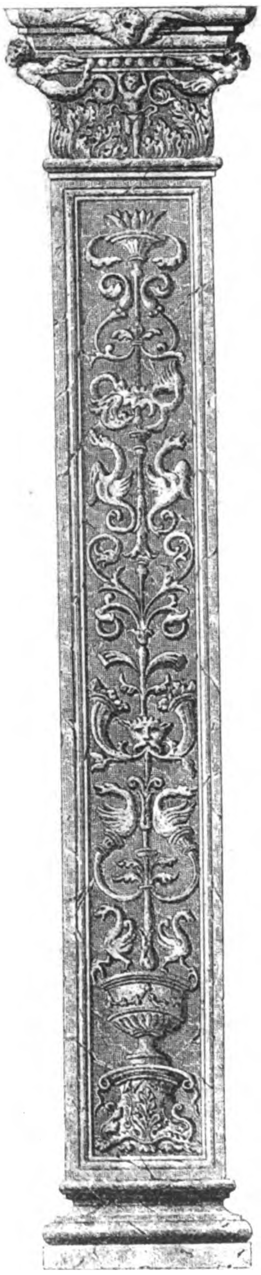

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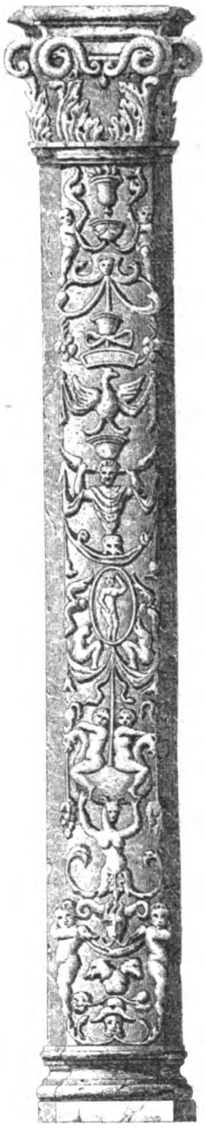

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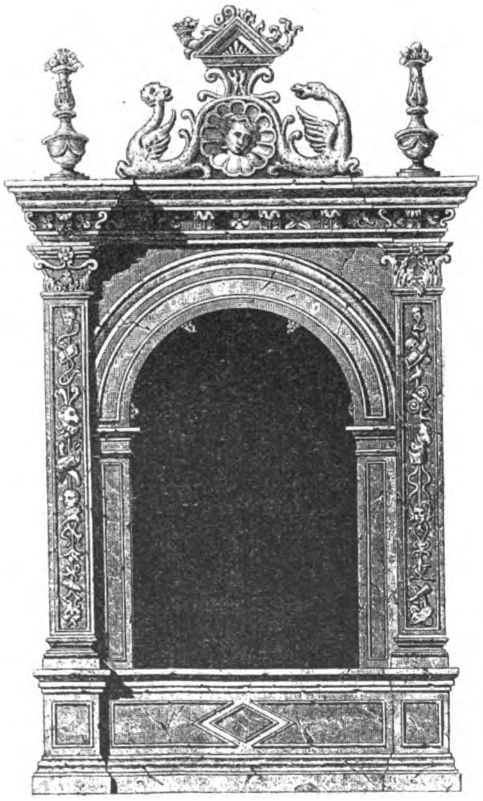

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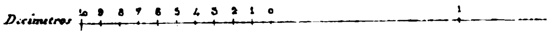

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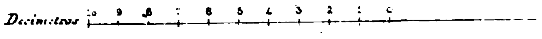

DETAILS FROM THE CASA-A

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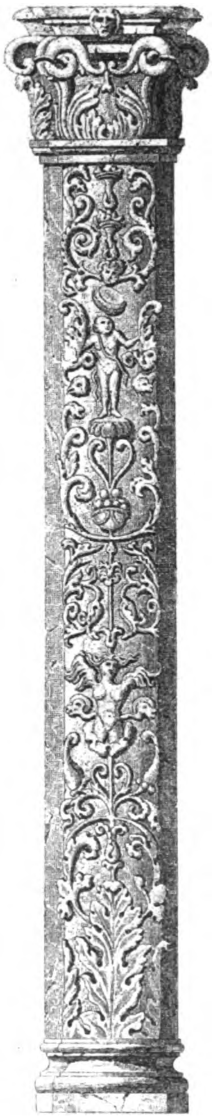

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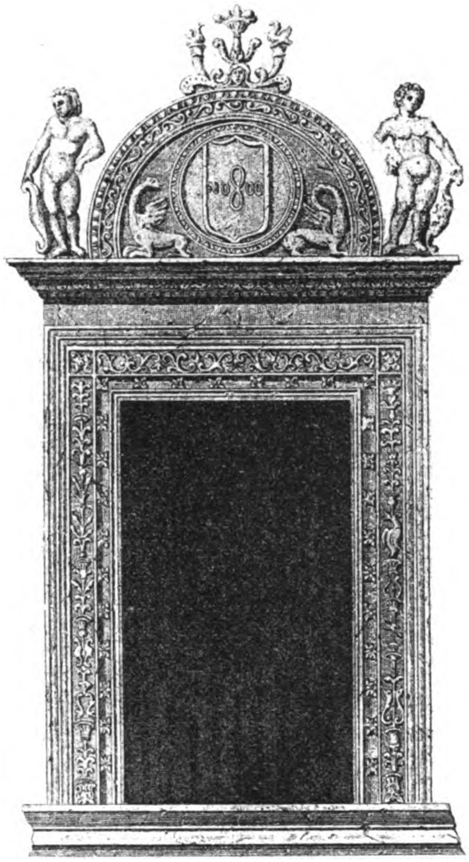

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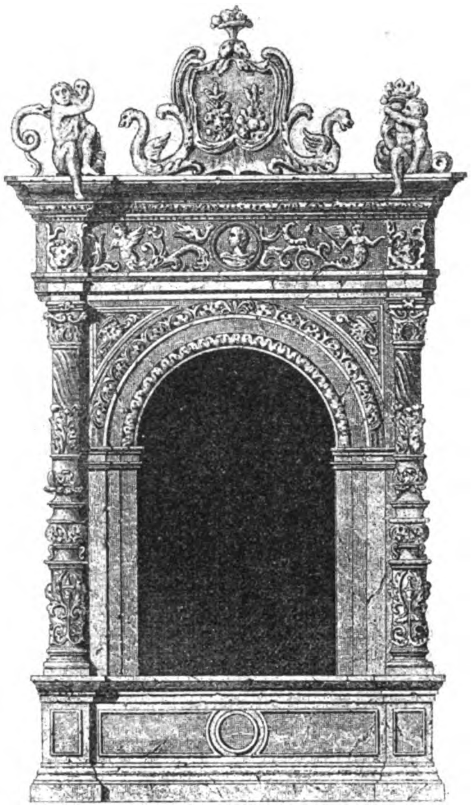

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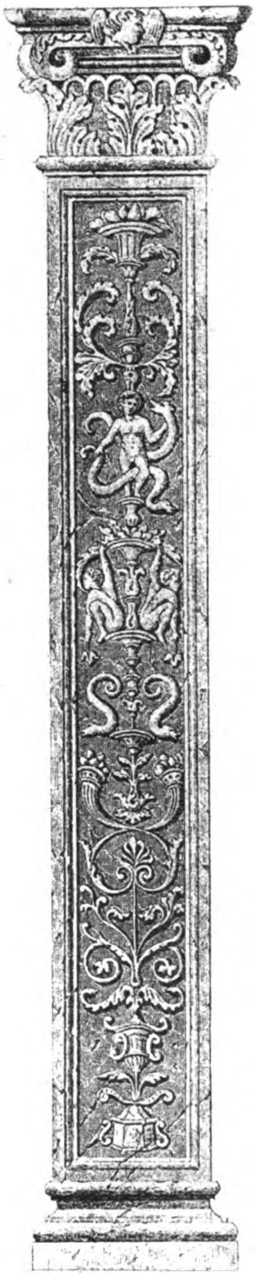

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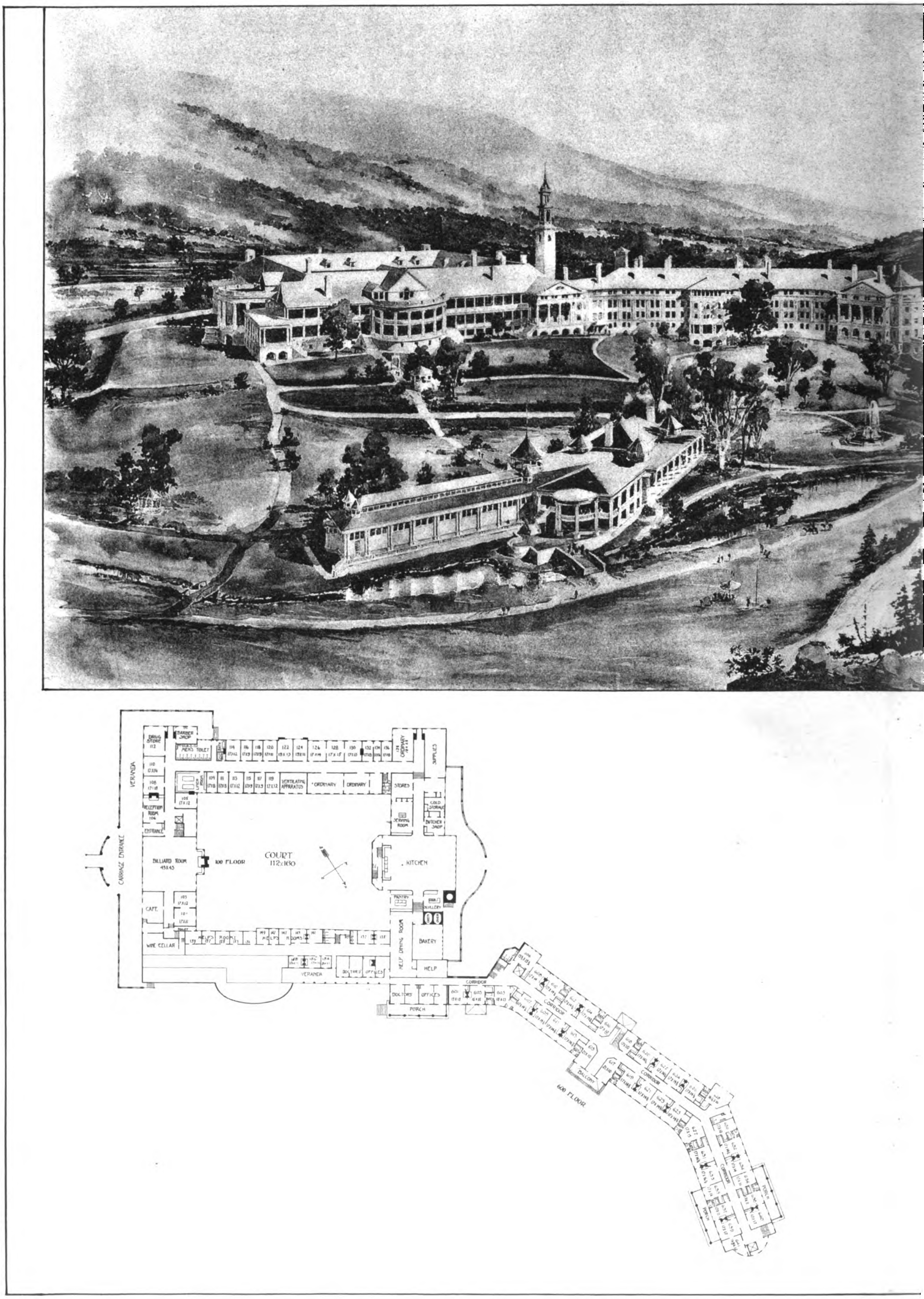
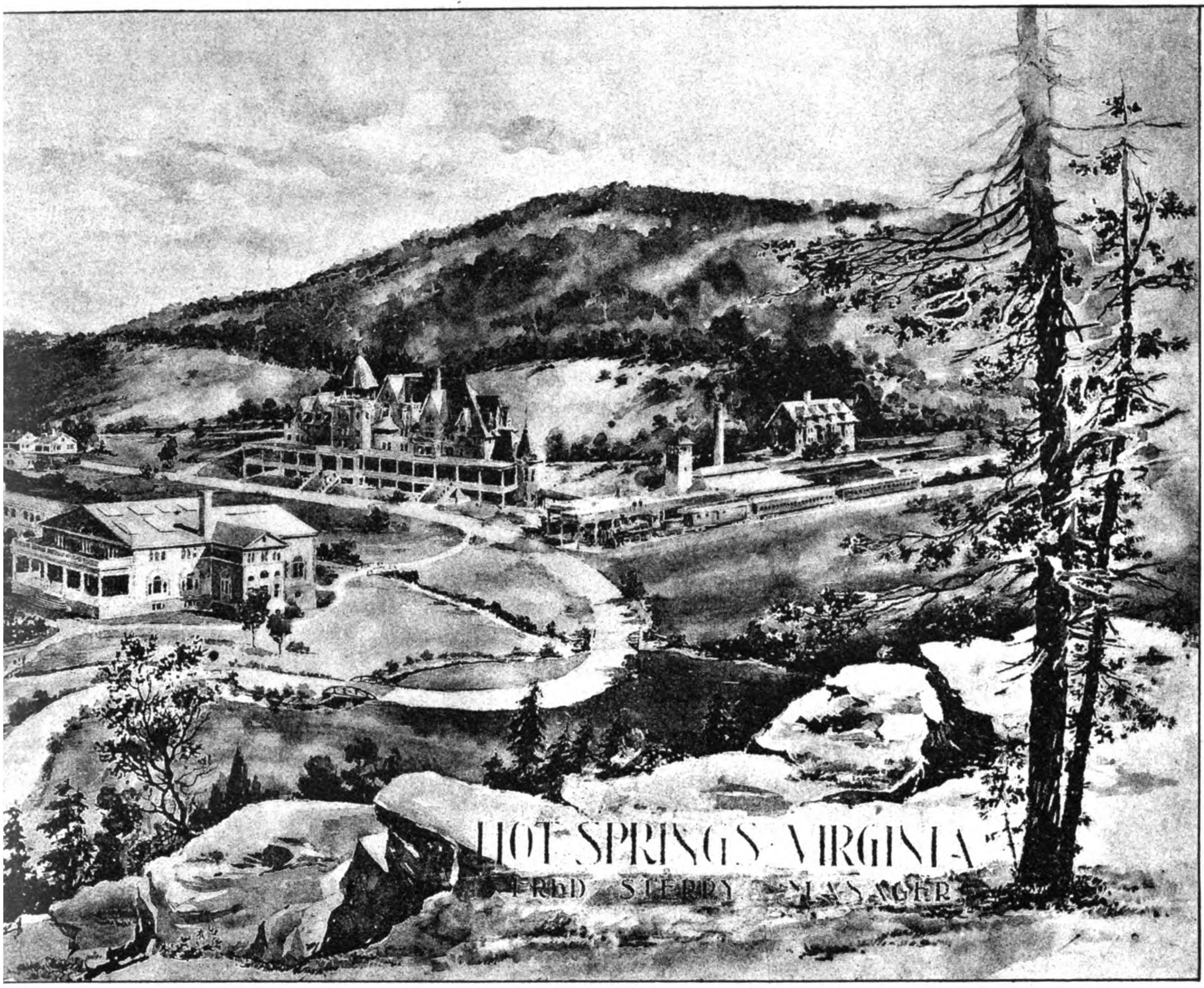
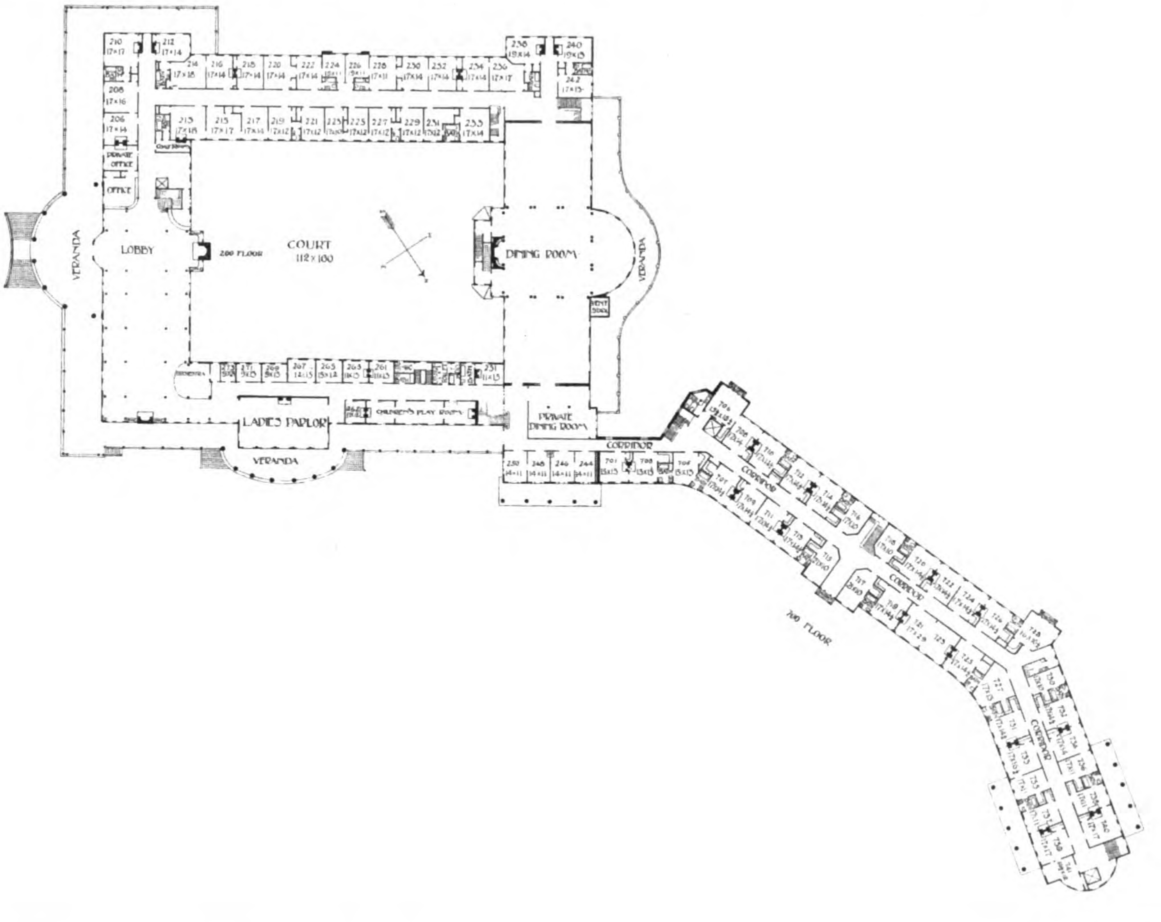


THE HOMESTEAD HOTEL

ELZNER & ANDERSO

ILDING NEWS CO.





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HOT SPRINGS, VA.

, ARCHITECTS.

painting, ceramic-work, artistic metal-work and woodwork were ingeniously combined.

In his latter years he allowed himself to be ranged among the candidates for the Institute, but he did not secure election, his great crime being that he had never been a Prix de Rome, and consequently was not included in that ark of the Lord from which the Académie draws its elect.

He was vice-president of the committees on admission and installation in the class of fixed decoration for this year's Universal Exposition; and here once again I have been able to appreciate his sureness of taste and the value of his advice.

For some time past people of affairs and those connected with building have been much concerned with the rise in price of building materials, and with the object of seeking the means of avoiding a crisis which becomes more and more threatening, M. Stanislas Ferrand, architect and deputy, recently took the responsibility of initiating a reunion, to which he summoned the architects, contractors and manufacturers of Paris. At this reunion M. Stanislas Ferrand clearly outlined the situation which confronted the building industry through the rise in the price of metals, notably in structural iron-work, and also through the increase in the cost of coal, which menaces all the industries which use it.

He had, as *Le Bâtiment* tells us, sought out and explained the origin of the crisis, and pointed it out as consisting in the very judicious organization of the syndicate of smelters, the syndicate of iron millmen, and finally in the understanding between the coal-producers to provoke a rise in combustibles, without which the increase in the price of materials could not be maintained.

The rise in iron was especially marked in March, 1899, at the time when the great contracts had been placed, and at the time when the metallic-work of the Exposition was nearly finished; hence the augmentation was the result of causes which were both normal and artificial.

Iron worth 25 francs the 100 kilogrammes in Belgium, where the syndicates are in operation, is worth 20 to 20½ francs in Switzerland, and 30 in France. These facts show that the Belgian forges could deliver in France iron at 21 francs if the duties were temporarily suspended.

The Chamber of Deputies was troubled and interpellations had been made on the subject of the crisis, but the Minister of Public Works, M. Baudin, argued that the chief cause of the trouble lay in the operations of metallurgy, that it was therefore normal, and that he saw no means of applying a remedy to it. But M. Stanislas Ferrand does not share this point-of-view and proposes as remedies, first, the temporary suspension of the import tariff; second, the intervention of the government to secure from the railroad companies a lowering of their traffic rates; third, official pressure upon the coal and iron syndicates; and, last, the compelling of the mine operators to extract a greater amount of coal from their pits. He is also of the opinion that the "*série de prix*" needs revision, and he suggested the formation of a commission composed of architects, contractors and manufacturers, who shall be authorized to bring pressure upon the public powers. After discussion it was agreed that this commission should consist of the presidents of the four architectural societies of Paris, and the presidents of the eleven syndical chambers of building materials, with powers to add to their number dealers in building supplies, leading manufacturers and the heads of large industries.

It is to be hoped that this organized resistance against the monopolists will bear fruit and arrive at a practical result.

Paris has just had a real emotion. Just as the opening of the Exposition approaches, and just as the whole world follows with anxious interest the state of advancement of the works, we suddenly learned that the carpenters had gone on a strike. This was disastrous. In several directions matters are rather behindhand, and there is not a day to lose. If the work should be abandoned, official opening on April 14 would be impossible. The carpenters demanded that they should receive the agreed price in the case of extraordinary and dangerous work. They argued that working more than twenty-nine metres above the ground was dangerous; that working on the ground, but below their comrades who were working above, who might drop upon them tools, bolts, etc., was not less dangerous, and that, owing to the confusion of all kinds of work going on at the same time, all workmen ran real danger. In all this, perhaps, they were not altogether in the wrong, for the arbitrators entrusted with examining the question have granted to the workmen their claims on several of these heads, and the work, very happily, has begun again with new energy.

If there are people who doubt of the success of the Exposition, they certainly are not among those who are interested in the apportionment of the kiosks in which refreshments are to be sold. These kiosks, of which the area must not exceed 20 metres, have been put up at prices varying between 12,000 and 20,000 francs, according as their positions are supposed to be more or less advantageous. It results from this that the mere sites for these kiosks bring in about 1,000 francs per square metre. One of them, which measures 4 square metres, has been leased for 20,160 francs, or 5,040 francs per square metre.

When one thinks of the added cost of building, the running expenses and the stock-in-trade, one shudders to think of the number of sausages which this price will make it necessary should be swallowed by visitors before the lessee can derive any profit whatever from his venture. It is true that many people can recall that the day's takings at such kiosks as these at the Exposition of 1889 reached a total of three, four, six, and even seven hundred francs. Let us hope that it will be the same in 1900, and that the expectations of these brave men of business may not be deceived.

For a long time architects have complained of the absence in the Louvre of a proper hall of architecture. Some years ago a dark and narrow gallery was opened to receive some of the drawings of Percier, Wailly, Louis and some others of less celebrity, but it was small and ill-appointed.

Could not there be re-discovered and classified the drawings of the masters of the seventeenth and eighteenth centuries? This should be so much the more easy because many of these drawings are scattered through the Louvre itself, in portfolios or frames, and lost amidst other drawings altogether foreign to architecture. Moreover, the archives of the Commission of Historical Monuments contain an inexhaustible reserve of drawings of the masters of the nineteenth century. The elements, therefore, are not lacking, and one would have only the embarrassment of choosing. The Société Centrale is concerning itself with this question, and its vice-president, M. Duchâtelet, has laid before the Minister of Fine-Arts the expression of the hope of all architects, that architecture, at present scarcely represented in the Museum of the Louvre, may receive an installation worthy of the importance that it occupies in the arts of design. The Minister, impressed with the neglect shown to the works of architects, has expressed the hope that in the approaching reorganization of the museum he may be able to give satisfaction to this legitimate hope which had been presented to him. But, alas! ministers pass away and their projects with them.

THE ENGLISH LAW AS TO LIGHT AND AIR IN BUILDING CASES.

THIS was the title of an address delivered January 9, last, before the Sheffield Society of Architects by Mr. Walter Emden, L. C. C. After some preliminary observations, the author said: —

Iron Grille.

"It is my desire, in the course of this paper, to show how great the necessity for alteration in the law is; and I trust also to show the remedy, and that it would not affect the rights of property. It is possible that an alteration of the law in the direction of simplification, and a quick settlement of actions, would reduce the expenses for professional advice which owners have to obtain in bringing and defending this class of action; but I feel assured that no professional man of standing, either in the legal profession, the architectural profession, or the surveyors, would desire such a consideration to stand in the way of a change which would be beneficial and would avoid delays, and be the means of saving useless expense to his clients.

"With regard to those gentlemen who have no consideration of this kind for their clients, I think I need not trouble myself. It is for the prevention of the abuse (the very great and serious abuse there can be and is under the present law, for purposes which are not legitimate), that we desire to see improved out of existence the present costly and evil system . . .

"There has been considerable attention drawn to the want of High Court Judges to dispose of the actions brought during the current sittings, so that there shall not be arrears left over to the next. I am of opinion that not only could technical cases, such as cases of light and air, etc., be settled more speedily and equitably but with a small portion of the present expense by a Technical Court; and if the High Courts were relieved of this class of case (of which there are considerable numbers every sitting), the necessity for strengthening the Bench would probably be done away with. As I have said, I desire to show what, from a practical point of view, is the effect of the existing state of the law.

"One of the first difficulties is the question of the rights of property. A right to light and air or any other easement, under English law, is acquired by having had an uninterrupted user for a certain number of years, and becomes a right of the property. Now in Scotland, and on the Continent, where Roman law prevails, these questions cannot be made the means of blackmailing as they are in England.

"Now, let me at once say, I do not intend to propose any interference with the acquisition of rights such as are obtained under English law. No right would be lost by the remedy I have suggested. In many, and in fact a very large number of cases, it would be much better to describe many of these acquired rights as a theft of that which rightfully did not belong to the property which acquires it. The present state of the law assumes that everybody knows it, and understands that if a gutter be overhung on to the adjoining premises, if a floor be supported on a wall belonging to an adjoining owner (even though he may never have seen or known that the floor was so supported) for a certain number of years, a right will have been acquired which must be reckoned with, often enough to the tune of very serious amounts, when an owner wishes to deal with or rebuild his property. I have known cases where, through a party-wall, and in more than one case through a wall belonging entirely to an adjoining owner, windows have been cut through above the roof, not only entirely unknown to the freeholder, who had let the property for a long period of years, but without the consent, as also without the knowledge, of the occupier or leaseholder. A law which allows all this to be done necessarily cannot be very perfect, and it hardly seems to me like a protection of the rights of property; but it is the law, hence its power for evil must be curtailed as far as the law has to be reckoned with.

"To follow one of my illustrations a little farther — a person whom I will call 'A,' owned a house at the corner of the esplanade and a side street in a large seaside town. Some period after, a person whom I will call 'B,' erected a house in the side street adjoining 'A's' property. It was desired many years after by the owner of the corner property to re-erect his premises, carrying them a floor or more higher than they originally were. Provision was made for the light and air of the adjoining owners on the esplanade, but as there was an independent wall belonging to 'A,' between 'A's' and 'B's' premises and the lights in the side street look out only to the back and front, no provision was deemed necessary. On pulling down the property it was discovered that a window had been cut through and put in by 'B' between the two hips of 'A,' the building owner's roof; that is, through the independent wall of 'A.' When 'A' proceeded to pull the independent wall down, it was found, further, that although 'B' had erected a wall from basement to ceiling of the ground floor, that above that height the wall was omitted, and support taken off the existing independent wall of 'A.' There was no record of any right having been given for either window or support, and, so far as an examination of those who owned the property formerly was concerned, no information could be obtained of any notice having been given. The solicitors, in whose hands the property had been for a great number of years, had no information either that any right or permission had ever been asked or given, or notice received. Yet I take it that the side-street owner 'B' was within his right to claim and to prevent the corner owner 'A' raising his building, and he did so, and also claimed and obtained the right to use the independent wall more or less as a party-wall. Now, I would ask any common-sense man upon which side, taking these facts as correct, should the right of property lie? Upon which side had the rights of property been protected?

"This is not a single case. There are scores of similar cases. I think while this case goes to illustrate my point, their numbers will prove the waste there must be by expensive actions, while the delays there must be when owners attempt to build is almost unlimited. There is hardly a building commenced in which some difficulty as to light and air does not crop up.

"I do not, in the remedy, suggest alteration in the manner in which such rights are built up under the law. I hope that the remedy, by preventing wasteful expenditure in lawsuits, if once brought about, would go a long way to prevent not only many of these infringments being sought after, but their being made a source of blackmail where they exist, and also preventing serious delays to the building owner (which delay is, after all, the main reason why large sums are paid), as to be stayed by an action of injunction is in many cases not only serious but often ruinous. I do not by my argument or this illustration put it forward that there are no legitimate claims of light and air, because there are many; and equally, on this side, the interference with rights of owners would be prevented, and no one would be prevented from protecting their rights by the fear that the building owner (who is possibly a wealthy man) will put them to all the expense he can, and at least to the expense of a heavy action. The fact that notice must be given before building is commenced, and that the case would be brought at once before the Technical Court, would, in my opinion, and I think in the opinion of most people, go a long way to prevent illegitimate claims on both sides of the question.

"I will give you a few instances with which I have become acquainted, and which will still further show in themselves the trivial nature of some claims set up, and also the delay and expense which they can cause. One case in London: An old house had been at some period divided into two, and though the division-wall between the two had been carried up right through the house, in the roof no division had been carried through. Both houses had an opening into the roof, and each had repaired its own part. The time came when rebuilding operations were set on foot by the owner of one of the houses. After he had partially pulled down, the owner of the other half set up a claim that the space in the roof belonged to him, and therefore the adjoining owner could not go higher and could not remove the roof. In order to prove the right to space in the roof, it was shown on a plan as a workshop, and some small bundles of material used in the trade carried on, on the plaintiff's side, were put into the roof. The height of the centre part of the roof was only about 4ft. 6in., and the rest of the roof sloping down as it did, there was necessarily very little height anywhere. A man could not have stood up to work in any part of the roof, and, in fact, to walk along in the highest part a man had to stoop. The whole space was small and unlighted, and quite impossible as a workshop, nor did it show evidence of its having ever been so used. Still, upon this claim the building was stayed, and although eventually the claim fell to pieces, there were large expenses incurred in fighting the action, and the defendant, by not being able to go on with his rebuilding, lost a considerable amount of trade to his premises.

"In another case, where considerable improvement had been made to the surrounding property by the building owners, a claim was made by the owner of a small property, which, a year or two before the improvements, would have sold for about 1,000*l* freehold. The claim of the plaintiff in this case was no doubt right to the extent that his building would be affected as to light, and had he in the first instance put forward his claim, he would have enabled the building owners to arrange the buildings in conformity with any line which had been settled. But the course taken in this case was to allow the building owners to commit themselves thoroughly to the building operation, and to wait until the full height at which any claim for light must be made was attained. Then the claim was made, and all the work done above the height, even before the injunction was obtained, was eventually ordered by the judge to be pulled down. I suppose the costs and expenses were not less than 2,500*l*, and the time occupied by the action eighteen months; but in this case the buildings were pulled down rather than buy the claimant's premises at an exorbitant price, which I am of opinion was the real object in view. That the building owners were allowed to proceed in front of the windows of the plaintiff with their work until the last moment, and to do so in such a manner as showed conclusively the intention was to erect a high building, without a complaint, which, if made, would have stayed the building owners, seems to leave but one obvious conclusion to be drawn. When building owners are thoroughly committed to a building such as this was, it is, of course, highly probable they will pay, and pay high, rather than be stayed in their work; but, in this case, if such was the object, it failed, but, as I have stated, with a waste of 2,500*l* and eighteen months of time.

"Another case of a similar class I remember in which the owner of an adjoining property claimed a right of light and air from a window cut right through a party-wall, but which had been covered up evidently since it had been cut through by the other owner by placing an obstruction in front of it. After the obstruction's removal during the pulling down, the case set up was that light came regularly through this window, and it was of great and serious consequence, and that the obstruction was not there to impede it. Also a general claim was made that the height of the buildings was such as to interfere with the light of other windows. An interim injunction was refused and the building owner allowed to proceed on the usual terms until the trial of the action. The decision eventually given by the judge was that there was no claim for this particular window, but that there was damage to light to some other windows by the height of the buildings, though they were only affected laterally. The damage to these lights was only proved to a trivial extent (covered easily by small monetary damages); but an order was made for pulling down, thus illustrating the risks and uncertainties of the present methods of trial. As a consequence, the object for which the claim was started succeeded, and the building owner, rather than pull down, paid 1,500*l*, and with his own costs expended considerably over 2,000*l*; the whole value of the adjoining property from whence the claim was made was about 3,000*l*. These cases are not singular. There are undoubtedly hundreds of them, and the waste and delay and uncertainty would total up to an enormous sum of money every year.

"Passing from the reasons which influence the bringing of a large portion of these actions, and the uncertainty as to their results, more particularly to the question of delay to building operations, I would impress the serious nature of this point by drawing attention to the course of an action similar to many I have had to deal with.

"There being no means such as I have suggested (there should be under a technical court) by which notice can be given to all adjoining owners, it is usual for these claims to be made only when building operations are observed to be proceeding, at all events where it has not been brought to the knowledge of the adjoining owners by a party-wall notice, or some other means required under the Acts dealing with building operations. When notice is received from the claimant, it is possible it is followed up by some little time being spent in negotiations, then, if these fail, by an application for an injunction, all this probably occurring after the building owner is committed to his contract. Necessarily, in claims such as these, complicated by many drawings and technical questions, the judges cannot give a decision on the application for an interim injunction, and the case goes for trial sometimes with and sometimes without the grant of the interim injunction, and from the date at which notice was first given for an injunction the trial will probably not be less than twelve months, and may not infrequently extend to eighteen months or two years. Building owners and professional men will understand what such a delay means in the midst of a building operation, the difficulty with the contract and contractor, and the loss of rentals and of business, and will be able to estimate pretty accurately what pressure such delay brings to bear on the building owner to come to a settlement even upon terms which may be absolutely outrageous.

"Another and strong incentive to acquiescence in heavy claims to avoid actions-at-law is that in order to try these cases it is necessary to bring a considerable amount of evidence before the judge and jury, all of which is expensive, and all of which must be met on the other side by experts and witnesses equally expensive, and both may fall on one of the litigants.

"I have known cases in which, for the proof of one angle of light (which was only considered a minor portion of the case), something like eight or ten drawings had to be prepared, with all the necessary copies, and what is even still more expensive, models of the building in question prepared also. In cases the decisions of which are so uncertain as these decisions are, it is absolutely necessary to put in evidence of the most minute character, so that it shall be most thoroughly brought home to the jury as well as the judge (the jury, too, composed of men who have no technical knowledge) the exact value of each claim made. Now, on the other hand, this evidence, of course, would be entirely unnecessary in the event of the case coming before the Technical Court, where the true nature of the claims would be easily and speedily ascertained and dealt with.

"I think what I have said goes a long way to prove what the expense, difficulty, delays and uncertainties are in dealing with cases of light and air, and I think, also, sufficiently proves the necessity there is for some radical alteration in the law, while the advantage to be gained by determining these cases expeditiously and economically are, I think, evident to all. It is not a question of taking away any rights of property, but of protecting those who have rights from having them taken away, and those who desire to build from paying blackmail.

"The suggestion which is made for a remedy is the constitution of a Technical Court, under the London County Council in London, and under the corporation in provincial towns and cities. Every building owner should be compelled to deposit a full set of the plans for any new building or material alteration of an existing building with this authority, paying such fee as will cover the expenses of the Court in dealing with them, or as may be deemed necessary by such authority. The Court should then require the owner to give notice to all the adjoining owners or others who may be affected, and after examining the proposed plans, to ascertain what, if any, interference with rights of light and air or other easements existed, determining, also, at the same time that the plans complied with their by-laws. Then the Court should proceed to hear, if required, the objectors and the building owner, and after such hearing, decide as to what modifications, if any, of the plans were necessary before consenting to the building being erected. The fact that such a decision was given before building operations were commenced, and before the building owner was pledged to his contract with his builder, would of itself be a substantial boon, apart from the greater saving obtained of time and money, from its being an absolute preventive of blackmailing in petty or trumped-up cases, while such decision would effectually protect, on the other hand, those who had legitimate rights from the chances of buildings being run up without notice and their rights improperly interfered with. I fail to see that any proper vested interest could suffer injury, and under these circumstances the good arising from it, as I think I have shown, must undoubtedly prove a valuable help to public and professional alike, and serve thus to encourage building operations. . . . I suggest what seems to me a simple means,— that is, an extension of the powers of the Building Act Tribunal in London, and of the Local Authority for the provinces. The fees charged to establish the necessary tribunal or court to be made to cover all the expenses of such court and its attendant officers, and I suggest they would still be moderate enough to become a mere drop in the ocean compared with the present wasteful process. Future discussion on this subject may devise better means, but, anyway, it is in my opinion (and I trust it will be the opinion of all those to whom I speak) evident that the settlement of this subject is urgent and should not be longer delayed. . . ." — *The Builder.*

THE ILLUSTRATIONS

[*Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.*]

THE HOMESTEAD HOTEL, HOT SPRINGS, VA. MESSRS. ELZNER & ANDERSON, ARCHITECTS, CINCINNATI, O.

THE NEW YOUNKERS BUILDING, DES MOINES, IA. MESSRS. LIEBBE, NOURSE & RASMUSSEN, ARCHITECTS, DES MOINES, IA.

DETAILS FROM THE CASA AYUNTAMIENTO, SEVILLE, SPAIN.

THIS illustration is extracted from "*Monumentos arquitectonicos de España.*"

[The following named illustration may be found by reference to our advertising pages.]

CHURCH AT BELLOY, SEINE-ET-OISE, FRANCE.

THIS plate is copied from *La Construction Moderne.*

[Additional Illustrations in the International Edition.]

SCIENCE HALL: ST. JOHN'S COLLEGE, ANNAPOLIS, MD. MR. HENRY RANDALL, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print.]

UNIVERSITY OF PENNSYLVANIA DORMITORIES: ENTRANCE TO QUAD, PHILADELPHIA, PA. MESSRS. COPE & STEWARDSON, ARCHITECTS, PHILADELPHIA, PA.

[Gelatine Print.]

HOUSE OF F. L. STETSON, ESQ., NO. 4 EAST 74TH ST., NEW YORK, N. Y. MR. ALEXANDER M. WELCH, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print.]

"MINLEY MANOR," FROM THE LAWN, FLEET, HANTS, ENG. GEORGE DEVEY, ARCHITECT.

"THE CAULIFLOWER," ILFORD, ENG. MESSRS. WATERMAN & LEWIS, ARCHITECTS.

SCREEN: LITTLE STANMORE CHURCH, ENG. MESSRS. BONEY & WAINWRIGHT, ARCHITECTS.

COMMUNICATIONS

[*The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.*]

MAKING GOOD DEFECTIVE WORK.

ROCHESTER, N. Y., February 23, 1900.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — The following question has arisen for solution and I should very much like to have your opinion with reference to such a case through your columns.

"A contractor plastered a dwelling-house with two-coat work, and, from all appearances while the work was being done, it was a good job. The white finish was applied over the brown and the whole was thoroughly dried. Then the wood-finish was put in the house — the walls and ceilings were kalsomined and everything pushed to completion. When the house was about finished, but before the final certificate was given the contractor, the plaster-work began to flake off in spots, showing bits of unslaked lime in the plaster. This, of course, destroyed the kalsomining in rooms where it flaked off.

"All the masonry, carpentry and the painting work was let to one contractor, who was really a carpenter, but sublet the other portions.

"Is it not proper to withhold enough monies from the contractor to redecorate the rooms affected by this poor plaster, as well as patching up with plaster all the defective places? The contractor holds that he should only do the necessary plaster patching and not pay for the re-kalsomining of the defective rooms. Kindly give any legal references you may have at hand in similar cases." ARCHITECT.

[THE answer to this question depends upon the wording of the contract. In general, one would be justified in assuming that the contractor had agreed to deliver everything that he had contracted to do in perfect order, including the painting, if this was a part of his contract; and that, if the painting suffered through defects in another part of the contract work, the contractor was bound to put the whole in the condition demanded by the contract; and that the architect, as entrusted with the duty of seeing the contract properly executed, was bound to reserve in his certificate enough of the contract price to pay for putting the whole of the contract work in the condition agreed upon. This view of the subject will, at least, be sufficient to protect the architect, even if it should not be shared by a court, for the architect is clearly entitled to act upon his own reasonable interpretation of a contract until the courts put a different interpretation on it.

In regard to legal precedents, the difficulty is that all such cases are decided by the interpretation of the actual contract, and, without knowing the exact words of the contract in the present case, it is impossible to say what precedents would fit it. For the benefit of other architects, it is well to observe that the clause in building contracts providing that defective work shall be made good may with advantage stipulate that all work disturbed by such operations shall also be made good at the contractor's expense. This will remove all possible doubt as to how far the necessary repairs should extend. — EDS. AMERICAN ARCHITECT.]

NOTES AND CLIPPINGS

SUSPENDED TRAFFIC OVER A SHIP-CANAL. — It is proposed to build at Duluth a suspended bridge over the ship canal. A bridge of this kind has recently been constructed to cross the Seine at Rouen, and the city-engineer of Duluth has proposed a similar structure to bridge the ship-canal of that city, which would not interfere with the free passage of ships to and from the harbor. The plans provide for trussed girders carried on towers at a height of 152 feet clear above the water. These girders will be mainly supported by cables, and will thus make a stiff suspension-bridge, on which rails will be laid. On these trucks will be run, and a car suspended at the level of the street. The machinery will be driven by electric-motors, and the car or platform will carry both foot-passengers and teams. The city power-house will supply the current to drive the machinery. — *N. Y. Evening Post.*

The Hawkesbury (New South Wales) Bridge. — The Hawkesbury River, of which the people of New South Wales are as proud as of the famous Sydney Harbor, is spanned by an immense railway bridge, the largest of its kind in the Southern Hemisphere, and, as regards its foundations, one of the most remarkable in the world. The actual length of the bridge between the abutments is 2,900 feet, and it is supported by six piers, each resting on a caisson filled with concrete and forming the most solid foundation possible. The caissons are respectively 101, 155, 146, 147, 144, and 162 feet in depth, these different measurements representing the inequalities in the depth of the river; the last-mentioned caisson being the deepest known foundation for a bridge. The main girders are 410 feet in length from centre to centre of bearings, the height of the principal girder being 58 feet above the surface of the river. The method of construction employed displayed considerable ingenuity. Each span was constructed on a large pontoon, 335 feet long, 61 feet wide, 10 feet deep, and provided with staging sufficiently strong to bear the whole weight of the immense mass of ironwork, and high enough to enable the span, on the pontoon being floated at high water into position, to clear the tops of the opposite piers, on which the girders rested when finally in place. When the pontoon, which was provided with 44 water-tight compartments, was complete with its staging, it was towed over a "gridiron" of piles and sills, in shallow, sheltered water, and sunk, the exterior and interior valves being all left open, so that the water ran freely in and out at all tides. After the span was ready, the valves were closed, the water pumped out, and as the tide rose the pontoon floated and was towed into its destined position between the two piers on which the span was intended to rest. As the tide fell, each end of the span descended into its proper place, and the pontoon and staging, released from the ponderous load, floated back to the gridiron. The bridge was formally opened for traffic on May 1, 1889. — *Exchange.*

Ruskin at Oxford. — There is an authentic story told of his undergraduate days that illustrates his instinctive courtesy and its effect. He was, as we have said, a retiring youth, shy, and more given to talking over Turner with Mr. Wyatt, the print-seller, than to such subjects as would interest his brother "gentlemen commoners" of Christ Church. So one night a dozen of those lively persons and their friends determined to "draw" the genius. It was a habit of his to go to bed early, mindful of the precepts and the practice of Denmark Hill, so at 11 the invaders broke down his "oak" and rushed into his room. He was there to receive them, in his dressing-gown. "'Gentlemen,' he said, with a sweet smile and with his exquisite voice, 'I am sorry I cannot now entertain you as I should wish; but my father, who is engaged in the sherry trade, has put it into my power to invite you all to wine to-morrow evening. Will you come?' The rioters were overcome, and withdrew with 'three cheers for Ruskin.' So throughout his life he possessed this power of disarming all opponents with whom he was brought into personal contact; only, if it were a question not of speech, but of the pen, his urbanity seemed to leave him and his eloquence was speedily steeped in gall. But over sensitive and enthusiastic natures, especially over ladies and very young men, his influence, when he chose to exert it, was extraordinary. Courteous as he was to persons who differed from him in talk, he was never, in later life at least, persuaded by them or turned one hair'sbreadth from his own predetermined way. The prophetic temper grew upon him. The more opposition he saw in the world around him the more absolutely persuaded he was that he was right and the world was wrong; while at the same time he could never see that what he pronounced right to-day he had just as fervidly pronounced wrong a month or a year or twenty years before. But this is of the essence of the prophetic disposition." Mr. Ruskin resigned the Slade Professorship at Oxford in consequence of, and as a protest against, a vote of convocation endowing a physiological laboratory wherein the vivisection of animals was intended to be practised. He loved his work there, for he was a true son of Oxford, proud of his boyish training there and glorying in his professorship. "He had been," says Mr. A. B. Walkley, "a gentleman commoner of Christ Church — one of the last of the gentlemen commoners, I think — and he never forgot it. He retained the velvet cap and silk gown which distinguished his class — and a velvet cap in my time at Oxford, a quarter of a century ago, was almost as unexpected a sight as a helmet. There was only one other such cap in the Oxford of those days, and that was worn by Prince Leopold. The pair, by the way, were great friends, constantly to be met driving together in the Prince's little pony phaeton along the Woodstock Road. At the professor's lectures the Prince — familiarly known among irreverent undergraduates as 'Luppy' — was a regular attendant. Ruskin had just been appointed Slade Professor, and at the same time an Honorary Fellow of Corpus, where he occupied rooms in the little garden Quad at the back, looking on Christ Church meadows, frequently dined 'in hall,' and gave occasional breakfasts to parties of undergraduates." — *London Times.*

Branding Logs. — No part of the work done by the wood-choppers in the Maine forests is more interesting than the marking of the logs with the "brand" of the individual or firm to whom they belong. Every log, like every animal on a cattle-range, must be marked before it starts out in the world. Log marking is something of an art. Each mark must be cut distinctly, so there can be no chance for dispute as to the mark, and the mark must be cut deep enough to withstand the scrubbing and grinding the log gets in going down the long and rocky river drive from the forest to the mills. The only instrument used in marking logs is the common wood-chopper's axe. As some of the marks are difficult to make, the markers must be expert in handling their axes on this kind of work, or they cannot get a job at marking. All the marking is done at the "landing," on the border of a stream, river or lake, where the logs are assembled during the winter, when hauled out from the woods where they were cut. The landing is in charge of a "head man," who is an acknowledged expert at marking He has with him a small crew, whom he instructs at first in the art of marking. This crew sorts the logs, generally into three divisions — the mill logs, which are the largest, and are to be sawed into lumber; the cedar, for shingles, railroad-ties and fence-posts, and the pulp logs, that are sold to the great pulp-mill corporations, which grind them into material for making paper. Each grade of logs has its mark. The mill logs take that of the firm by whose gang they were cut and for whose mill they are intended. The cedar takes another mark of the same concern, or, if they are to be sold to another firm, the mark of the firm buying them. The pulp logs take the mark of the pulp-mill company. When the ice goes out in the spring all the logs are rolled into the water together, to be driven to the sorting-booms, which are necessarily above the first mill having logs in the drive. In some cases the distance from the region where the logs are cut to the sorting-room is from 150 to 200 miles, through crooked and rocky streams, over falls and rips, across lakes and down rivers. The driving is done by crews employed by a log-driving association composed of all the firms cutting lumber in the region from which the lumber comes. The Penobscot Operators' Association has headquarters at Bangor, while the Kennebec operators make their headquarters at Augusta. Log-marks are registered with the log-driving associations, in order that there may be no duplications. Some of the marks are devised in the woods, but most of them are got in the lumber firm's office. Nearly all the lumbermen on the Penobscot drive carry in their memory the marks of the operators in this part of the Maine woods. They know the marks as they know their alphabet, and can tell the ownership of a marked log at a glance, although there are several dozens of different marks used in these parts. Logs that are broken off in the drive or lose their marks before reaching the sorting-boom are know as prizes, and are sold at auction for the benefit of the log-driving association. — *Boston Globe.*

Nineteenth-century Crosses on Italian Mountains. — Colossal crosses are to be erected in this last year of the nineteenth century on nineteen mountain peaks of Italy to commemorate each century. The Rome branch of the international committee of homage to Jesus the Redeemer have taken the work in hand, and these are the summits chosen: Saluzzo and Ivrea, in Piedmont; Brescia, in Lombardy; Udine, in Venetia; Genoa, in Liguria; Faenza, in the Romagna; Pistola and Grosetto, in Tuscany; Norcia, in Umbria; Aquila and Sulmona, in the Abruzzi; Fossombrone, in the Marches; Cimino, at Viterbo; Montorella, or San Gennaro, near Tivoli and Rome; Maranola, near Gateta; Otranto, Reggio di Calabria, Caltanissetta and Nuora. Two crosses already rise on heights near Rome — the English college having erected one on Tusculum and the Irish college one at Tivoli. Those to be raised this year will be of varied designs, cut from granite, marble, or whatever stone characterizes each region, and each will bear the inscription: "*Jesus Christus Deus Homo Vivit Regnat Imperat.*" — *Boston Transcript.*

Subsoil Water and Disease. — The decoration by the German Emperor of Dr. Max von Pettenkofer, of Munich, with the Prussian Order Pour le Mérite will have a significance for sanitarians beyond the honoring of a veteran in scientific research. It is a signal and official recognition of the lasting value of those principles of sanitation which are associated with the name of Von Pettenkofer in his own country, if not to the same extent in England. The engrossing interest shown of recent years in the study of minute organisms, as the causes of so many maladies, has had the apparent effect of altering the point-of-view in preventive medicine. In our glib talk about the microbe of this and the microbe of that we purport to be using the language of scientific precision. But the whole of our sanitary practice is indifferent to this neatness of theory and smartness of phrase. At first empirically, and afterward by the light of Von Pettenkofer's teaching, practical sanitation has always been directed to the medium or soil in which these minute organisms live and thrive. If there were nothing to attract them, they would not be there; or, being there, they would not be noxious to man. The lesson was taught clearly enough in this country by the cholera of 1832, and was yet more strongly enforced by the more severe outbreak in 1849 — the Health of Towns Commission, which was appointed in the interval between the two visitations, having marshalled the evidence in scientific form. It was shown that our best security against diseases of a certain kind was to live upon a clean soil, and drink only pure water. To call the distinguished Munich professor the apostle of this doctrine would be going too far; its value was perceived, after a fashion, in this country, and was even acted upon before his researches were well begun. But scientific inquiry serves the useful purpose of driving home the suggestions of commonsense, as well as of refining them and extending them to new applications. The special point of Von Pettenkofer's teaching has been the part played by the ground water in making the soil poisons active at one time and less active at another. Technical as it may seem, his law of miasmatic infective diseases following inversely the rise and fall of the subsoil water, according to season or other circumstances, would be of immense practical importance if it did no more than enable us to understand what we could not alter. The mysterious pestilence is more dreadful than one of which we have discovered the law. But all sanitarians know that it is of more than curious interest to understand the connection between epidemic outbreaks of disease and fluctuations in the subsoil water. The practical applications of a true scientific principle are as boundless in this as in other cases, and there are many of them still to be made. It is only within the last ten years that a writer here or there has been directing attention — or, rather, redirecting, for it is an old idea — to plague as a soil poison, subject to Von Pettenkefer's law of subsoil water. — *The London Standard.*

Removing Books from the Doge's Library, Venice. — The weight of the 200,000 volumes which have been in the Doge's Palace at Venice since 1812 is endangering that old building, wherefore the Government has voted 75,000 francs for their transference to the Zecca building. — *N. Y. Evening Post.*

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THE full board of the Supreme Court of Massachusetts has rendered an interesting decision, upholding the authority of the Board of Appeal to which the final decision of matters under the building laws is committed by statute. The owner of a lot of land in Boston wished to improve it by erecting a tenement-house on it. The laws of Massachusetts regulating the construction of tenement-houses require them to be fireproof, and, as the plans did not show fireproof construction, the Building Commissioner refused to approve them, or to issue a permit for carrying them out. The question was then referred to the Board of Appeal, which held a hearing, and gave its decision, confirming the Commissioner's action, and directing him to withhold his permit. A petition was then carried to the Supreme Court asking for a mandamus to compel the Building Commissioner, notwithstanding the decision of the Board of Appeal, to issue the permit. The Court, however, held that, under the statute, the Commissioner had no power to issue a permit after having been directed to withhold it by the Board of Appeal, and that the petitioner could not, on the petition, have the decision of the Board of Appeal revised. Whether the Court would revise them on a different petition was left uncertain; and, of course, it may be supposed that a petitition alleging fraud would be entertained; but, in the absence of any allegation of wrongdoing on the part of the Board of Appeal, it may be assumed that its decisions are now final in Massachusetts.

THE city of Detroit is to celebrate the two-hundredth anniversary of its foundation by the erection of a monument on the lower end of the island of Belle Isle, in the Detroit River. This portion of the island is to be made into a park, in the middle of which is to stand a lofty column, surrounded by groups of sculpture, and supporting a tripod, which is to be illuminated at night. The column is to be surrounded by a basin, with flights of steps, and a Doric peristyle, in which will be placed a statue of "Cadillac," to be followed, perhaps, later, by statues of other distinguished persons. Messrs. Stanford White, Augustus St. Gaudens, Frederick MacMonnies, D. W. Tryon and Thomas W. Dewing were the committee selected to study the question of a memorial, and the design, the idea of which will strike architects as very interesting and effective, is the work of Mr. White. The cost of the work is estimated at about a million dollars, and Detroit could hardly celebrate its two-hundredth birthday more judiciously than by carrying it out.

THE last appropriation bill passed by Congress contained a demand for a special report upon the forestry work of the Department of Agriculture, to "show its utility," thereby, in the indirect way familiar to politicians, raising, in the mind of careless people, a doubt as to whether it is of any utility at all. The French "correctional police" have a way, when any crime has been committed, of looking first for the woman, who, according to their experience, must have really suggested the crime; and, in seeking the explanation of political movements, it is well to begin by considering the persons whose pockets will profit by them. In this case, the rich and powerful ring which, until within a few years, profited enormously by the simple process of stealing the public timber from Government lands, and selling it, may easily be imagined to have interest enough in the matter to try to abolish the Forestry Bureau, which has exposed and checked their depredations; and their efforts would be seconded by another ring, politically powerful, which finds advantage in raising, on the public lands, immense herds of half-wild sheep, which nibble and destroy vast numbers of young trees; so that the citizens who do not belong to any rings, and who share their interest in the public lands with so many others that each one's portion is small, must make an effort which may seem disproportionate to the occasion in order to resist the direct influence of the rings, applied under the instructions of skilful lobbyists.

IN point of fact, it would hardly be too much to say that the Forestry Bureau has been for the past ten years, and seems likely to be for a hundred years to come, the most useful branch of the Government. Every variety of waste of the public money is well represented at Washington, and it is in the Department of Agriculture, and in the Bureau of Forestry in particular, that we find almost the sole example of the public authority, and the public resources, applied to the preservation and increase of the natural wealth of the country, the wealth which is to feed, clothe and educate future generations, even more than our own. Ruskin used to say, as a brief summary of his system of political economy, that "Food can only be got out of the ground, and happiness only out of honesty"; and in this country, not only food, but fuel, shelter and clothing can, for the vast majority of the population, be obtained only from the soil of their own country. We often hear it said that England is prosperous without forests, but England is a small country, with hundreds of seaports, to which swarms of ships bring food and timber from the densely-wooded countries a day's sail away, while the immense territory of the United States is dependent on a very small number of seaports, and the other agricultural countries of the world are from three to ten thousand miles away, even from our coast. Our grandchildren in the Mississippi Valley, who must pay the bills, will not look with so much complacency as certain American economists of the present day on the necessity of importing timber for their houses from Norway; yet, if the warnings of the Forestry Bureau are not heeded, they will certainly be obliged to do so, and, to pay the cost, they must sacrifice a large part of the modest comfort which is so dear to the American heart. Moreover, it is not alone to save the timber wealth of the country that the Forestry Bureau has worked so energetically. Every one knows now that the fertility of open and cultivated soil depends upon the neighboring forests, which moderate the extreme temperature of both winter and summer, keep the ground moist by checking evaporation, induce frequent moderate rains, instead of alternations of violent storms and parching dryness, and maintain, by the water which collects in their cool soil, the steady flow of brooks and rivers. The farmers of Western Kansas and Nebraska have good reason to know the difference between a moist, equable climate and one exposed to alternations of drought and flood, and those of other States, once fertile, are beginning to learn the same lesson; but even they do not yet sufficiently realize the fact that their crops of grain, their beets, the pasturage of their cattle, their business success, and the comfort of their families, have been stolen from them by greedy speculators, who have either entered and laid waste the public forests, or, with legal authority, have destroyed the woodlands in which, as the conservators of rainfall and springs, the farmers, the fertility of whose holdings is dependent upon them, have a very important and definite interest. We are inclined to think that, with our present knowledge of the influence of forests on climate, this interest would be recognized by the courts, and interference with it made a ground for damages, just as damages can be recovered from the owner of land on a brook or river who diverts a portion of the water needed to drive a mill farther down the stream; but this question has yet to be settled. In any case, however, it is the Forestry Bureau which has opened the eyes of the American public to the gravity of the dangers to which it is exposed; which has brought about, through its energetic and intelligent efforts, the establishment of several important schools of forestry, and has awakened many private owners of woodland to an appreciation of the advantages of a rational treatment of their property.

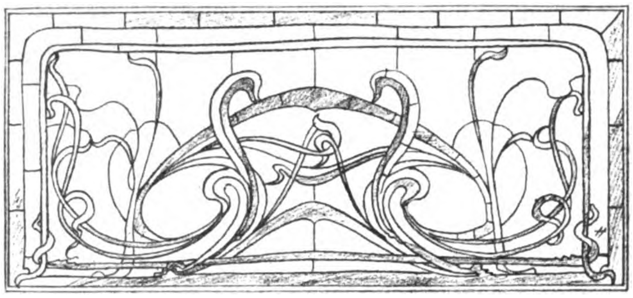
THE Council of the Royal Institute of British Architects has nominated Professor Rodolfo Lanciani, of Rome, as the next recipient of their Royal Gold Medal. No one could object to Professor Lanciani, who is as well known in this country as in England for his zeal and discretion as Government Director of archæological exploration in Rome, and for the charming books which give an account of his work, as a recipient of any honors that an artistic and intellectual body can confer upon him; but it seems a little strange that a person outside of the profession should be chosen. In this country at least, archæology and architecture are two very different things, and, while learning of any sort is commendable in a professional man, we do not see lawyers made eminent by medical societies, or physicians elected to office among engineers. That Professor Lanciani's work is of great interest to architects is undoubted, and, as all architects look upon ancient Rome as the mother of the architecture of the present-day, this is natural; but it would be hard to say in what way that work has advanced architecture.

PROFESSOR MELANI writes to *La Construction Moderne* that the project for building a new façade to the Cathedral of Milan, which has been on the point of execution for nearly fourteen years, and which the Chapter of the Cathedral now feels itself ready to carry out, is meeting with strong and organized opposition in the city, and it is not impossible that it may be abandoned. Architects will remember the great international competition of 1886, invited as a consequence of a bequest made by a citizen of Milan to the Chapter for the purpose of rebuilding the façade. The first place in the competition was awarded to Joseph Brentano, a young Milanese architect, who, however, died shortly afterwards. The bequest was not sufficient to pay the whole cost of the work, and a condition was attached to it, providing that unless the reconstruction should be begun within a certain period, the money should revert to the great Hospital of Milan. The limit of time has now nearly expired, and the Cathedral authorities, finding that they must act, or lose their bequest, have announced their decision to begin the execution of Brentano's design. The prospect of a new façade to their Cathedral has, however, awakened the thoughtful inhabitants of Milan to the merits of the old one. It is true that the old façade is mainly in a Renaissance style, quite out of harmony with the Gothic of the remainder; but, considered as a Renaissance design, it is very far from being without merit. Moreover, this part of the building possesses the historical interest of having been carried out by the great and good Cardinal Frederic Borromeo, who took from the family of the distinguished artist Pellegrini the designs which he had made for the work many years before, and had them executed. After the death of the good Cardinal, a new taste came in, and the upper portion of the façade, which was not yet finished, was continued in a Gothic style. The work was still unfinished when Napoleon was elected King of Italy, and it was he who provided for its completion, still in the Gothic style, from the plans of Amati. It is evident that the persons who would care most for the complete harmony of all portions of the Cathedral are, to a great degree, those who would also regret most to lose the recollections of Frederic Borromeo and Napoleon with which the present façade is associated, and it is not surprising that the sense of impending historical loss, as the time for it approaches, begins to prevail over the anticipations of artistic gain. Whether it will, in the end, prove strong enough to cause the abandonment of the project remains to be seen, but the decline of local pride, which has been very rapid of late years in Italy, with the increasing and obvious necessity for charitable endowment in Milan, will have much influence in reconciling the mind of the public to the transfer of the bequeathed fund to the Hospital.

IN nothing, perhaps, has the progress of science been more remarkable, to say the least, than in the investigation of sewer air. Possibly some of our readers have at this time on their desks, presented by a polite manufacturer of traps, a blotter inscribed with the legend "Sewer-gas is Death"; and even the younger men in the profession have been carefully instructed in the idea, supported by countless examples, that the inhalation of the air of sewers produced vertigo, nausea and other unpleasant immediate symptoms, developing later diphtheria, scarlet-fever, croup and meningitis, if not typhoid fever. Now, we are informed by people who ought to know that, far from reeking with fatal effluvia, the atmosphere of sewers is purer than that outside. According to some of the latest observers, "the air of sewers is remarkably free from micro-organisms," and we are told that only half as many organisms are found in a given quantity of sewer air as in an equal amount of ordinary outdoor air. At this rate, we should expect to see, before long, sanitaria for consumptives fitted up alongside the sewers, each apartment, perhaps, with a little cesspool for inhalation purposes; but it seems that, although the air of sewers is so salubrious, the water in them is not, and by splashing, evaporation of sediment, and in other ways, it may impart to the beneficent atmosphere over it a proportion of "mycelium spores," whatever those may be, and other objectionable substances. It seems to the practical man, then, that however delightful the sewer air may be by itself, the probability that it may have "mycelium spores" floating in it makes it just as desirable to keep it out of houses as if it really deserved its former evil reputation. It does not make much difference whether a person gets a sore throat from sewer air or from spores, so long as they are likely to be found together; and, as the devices for excluding sewer air from houses also keep out the spores, we shall not yet be obliged to change our plumbing systems to suit the new ideas. The investigations which have been made into the character of sewer air have, however, shown that the air in house-drains and soil-pipes is far more offensive than that in sewers, and architects, most of whom are aware of this fact already, may feel themselves supported by the most modern science in putting traps close to the outlets of fixtures, and in avoiding so far as possible long runs of waste or overflow pipes, unventilated and inaccessible.

IT is with a certain envy that Americans, who are occasionally reminded, by the sight of their grass-grown wharves, of foreign commerce as something which employs and enriches Englishmen, Germans, Frenchmen, Norwegians, Dutchmen, Italians and Japanese, read of the extraordinary prosperity of the principal seaports in Europe. The changes in railway routes, due to the opening of tunnels, or other great engineering works, have diverted traffic in new directions, as, for example, to Genoa, rather than Marseilles, and to Hamburg, in place of Rotterdam and Antwerp; but the old ports have declined little, if at all, from their ancient condition, while the more favored ones have grown with astonishing rapidity. It is only about fifteen years since the Duke of Galliera, who had made an immense fortune in building new railways, bequeathed to his native city of Genoa some four million dollars, to be used in the construction of docks, which he believed, through his knowledge of the tendencies of transportation on the Mediterranean coast, would soon be used if they were provided. We well remember visiting, soon afterwards, the Terrazzo di Marmo, or marble terrace, which formed at that time a pleasant promenade along the shore of the harbor, and seeing it torn in pieces to carry out the Duke of Galliera's plan. The new docks were hardly finished before they were crowded with steamships, which took there freight brought from Northern Europe by the Saint-Gothard and Mont Cenis tunnels, to transport it to South America, Africa, Egypt, and, by the Suez Canal, to Asia and Australia. New docks were added, and again were found inadequate, and even now the harbor is constantly crowded. Meanwhile, however, the railway accommodation, which, a decade ago, was far in excess of the needs of the traffic, has become inadequate to the demand. For the lines from the Mont Cenis alone two tunnels have been cut, just outside the city, at Ronco and at Giovi, one five miles long, and the other a little shorter, and these have become so crowded with trains that the longest, that of Ronco, has just been enlarged. At the same time, an extensive system of new tracks is in process of construction in the neighborhood of the docks; a freight-car station has been formed at Rivarolo, which will accommodate two thousand cars, and new works of other kinds have been undertaken, to a total value of something like ten million dollars; yet, even before their completion, they are acknowledged to be inadequate, and, with the opening of the Simplon tunnel, which will soon take place, a great increase of accommodation, both for railways and steamships, will be absolutely necessary.

AXIOMS AND PRINCIPLES OF MODERN HOSPITAL CONSTRUCTION.[1]



Leaded Glass-panel in the Chateau de la Hulpe, Belgium.

GENTLEMEN,— It has been said that hospitals are the measure of the civilization of a people. San Francisco intends to enhance its reputation by the erection of a new hospital, replacing one which reflects rather unfavorably on the standard of this community. It may, therefore, be of some timely interest to discuss hospital construction, and I propose to do it at the hand of the plans submitted in the competition for the City and County Hospital.

I have looked over these plans rather carefully. It is my present business to criticize other architects' work. A gentleman recently said to me when I first met him, "I did not know that there is such a personage as architectural critic." The gentleman is in some way right. Architectural criticism is in its very infancy. Few indeed are the architectural critics who possess in an adequate degree those four indispensable qualities — knowledge, honesty, courage and sympathy. As an editor of an architectural publication, I must necessarily be an architectural critic. I must be able to discriminate what is appropriate, characteristic, original and practical. Such knowledge can only be acquired by having seen much, by a careful study of the axioms, principles and tendencies of architecture in general, and of the pending architectural task in particular. Criticism should not be based on personal opinions and sentiments, but on experiences, facts, principles.

The principles of architectural composition are essentially those of common sense, logical reason, and are, therefore, intelligible to all. They are not absolute and binding laws, but they also can not be overthrown. If originality is sought by revolution of axioms, only singularity can result.

Before we can enter into a criticism of these plans we must ascertain what are the axioms and principles of modern hospital construction. On what facts are they based and how were they developed? The principles now accepted are thoroughly modern, and constitute a new system which has nothing more to do with the old. But there is much interest and profit in studying the history of the hospital, for it teaches us through what processes the present ideas were evolved.

I will therefore start by giving a short history of hospital construction in Europe and America.

All hospitals in the Middle Ages were under the control of the monks. They were unusually large and many-storied. The sick were aggregated in them in a most unhealthy way. The best example of these mediæval hospitals is the famous Ospedale Maggiore, the great hospital in Milan, accommodating two thousand patients.

In the last century the foundation was laid for a better state of things. The importance of air and sunshine as curative agents began to be properly understood. For example, the Royal Infirmary of Edinburgh, established 1734, had wings only two stories high containing wards with large opposite windows and a smaller number of beds. In 1764 a small naval hospital was opened at Plymouth, Eng., having wards in separate pavilions with only twenty beds to the ward. That was the first pavilion hospital. To France is generally accorded the honor of having originated the pavilion system and formally laid down its principles in the famous report of the Academy of Science in 1788. But the story goes that the committee preparing this report visited previously the little pavilion hospital at Plymouth and from it took the leading ideas of their report. Yet it cannot be denied that it was a Frenchman, Ténon, who treated the subject scientifically. His report presented to the Academy forms the foundation of the present system. It advocated the one-story pavilion.

It was not until the middle of this century that the first pavilion hospital of any importance, the Lariboisière, in Paris, was completed. Against the dicta of Ténon, it was three-storied. It marks, however, the beginning of the present era. It reflected back upon England where the Crimean War caused the erection of the Herbert Hospital, the first important example of the detached pavilion plan.

Hospitals are indeed the result of wars. The American Civil War produced the temporary barrack-hospital, and the Austro-Prussian War had its effect in Germany in the first hospital built according to the new American plan — the civic hospital in Leipsic with fourteen one-storied pavilions.

The Franco-German War has given another impetus to hospital reform, and Germany took the lead in Europe in carrying out the new principles. An interesting example of this influence is seen in the Berlin civil hospital, accommodating six hundred patients. It was wisely decided to erect it outside the city in a beautiful park. It consists of ten large pavilions, and two smaller ones reserved for contagious cases. This is one of the most perfectly organized hospitals. Fault, however, is found with it because the buildings have projections which interfere with the circulation of the outside air, and because they have two stories. Another noteworthy hospital was built at the same time in Berlin,— the Military Hospital at Moabit, for five hundred and ten sick and wounded. This is also located outside the city. The system of detached buildings has been applied here in the most thorough fashion. The principal wards have but sixteen beds, the others six, three or two.

The new civil hospital in Hamburg is the most noted and the largest in Germany. It accommodates fifteen hundred patients, and is spread over an area of nearly forty-five acres, situated about three miles north of the city. It comprises eighty-three detached buildings, of which fifty-five are destined for the accommodation of patients. All are built in brick, and are placed parallel to each other. They have at each end projections, which, however, do not facilitate the circulation of the outside air. The pavilions as well as the service buildings are connected by covered ways. The wards consist of only one floor above the underground basement. The buildings form three series. The first series is intended for thirty-three patients, the second for fifteen, and the third for six patients only. The most important improvement introduced into this hospital consists in the method of heating, effected by the circulation of steam through pipes placed beneath the mosaic floors, which are thus raised to a temperature of 70° F. It is in fact an experiment on a large scale of the system of heating by floor or indirect radiation, which is the most effectual of all, though not the cheapest. Notwithstanding its great cost, this system should be considered for all new hospitals.

In Belgium the hospital question has received great attention. The new hospital at Ghent is especially noteworthy. The buildings have smooth walls, destitute of all projections, and are one-storied.

In Holland we find one of the most curious hospitals, the Antwerp [*sic*] civic hospital. The chief feature is the adoption of the circular ward form. Great interest and controversy have been excited by this new form of construction. It was not without difficulty that the architect of this hospital succeeded in having it adopted.

There is nothing of note in regard to Austrian, Swiss, Italian and Spanish hospitals, all being built according to old-fashioned ideas.

Hungary possesses two interesting examples in Budapest. The St. Stephen's Hospital comprises eight large detached buildings, accommodating six hundred and fifty patients. A feature of this hospital is that it was the first allotting wards to special diseases.

The St. Elizabeth Hospital, in Budapest, occupies an elevated position on the right bank of the Danube, and is built on the detached system. The various buildings have only one floor above the basement. The buildings are not connected by passages.

In the northern part of Europe we find good hospitals in Denmark, Sweden and Russia. The Copenhagen hospital is built after the one-story pavilion system. The various buildings have no connecting passages.

Moscow, in Russia, possesses a military hospital which is unique of its kind, because of the open-air treatment of the patients in summer-time. The city of St. Petersburg has started on the road of progress by putting into practice a principle which ought to be adopted by every great city — that is, no more hospitals within the city limits, but only emergency stations. The patients are removed to large establishments in the country. This is an excellent system for the patients, but of some inconvenience for the doctors. The means of rapid locomotion, however, overcomes this inconvenience more and more, and I understand that Berlin and Paris will soon follow the example of St. Petersburg.

The modern English hospitals do not show any special features. They are carefully constructed, and every contrivance is utilized to facilitate the service. The finest is the St. Thomas Hospital, in London, on the right bank of the Thames. It presents to the river a long line of large buildings. The wards are superposed. This is the weak feature of all the hospitals in the heart of populous districts where the space is limited.

The system of superposed wards has also been followed in the erection of the hospitals of the city of Paris. It is curious that the city where the new principles found their first expression more than one hundred years ago has the worst types now in existence. The Salpêtrière Hospital is the largest hospital in the world. It has space for six thousand beds, which represents a fearful aggregation of sickness in the centre of a great city. The new Hôtel Dieu in Paris is generally acknowledged to be one of the worst examples in modern times. Its construction was carried on under great opposition of medical authorities. The plan does not differ much from the plan adopted for the Ospedale Maggiore, in Milan, four hundred years ago. Hygienists did not fail to criticize this system severely for two reasons — the excessively large number of patients and the unsatisfactory arrangement of superposed wards. Partial satisfaction was given to the wishes of medical men — the height of the building was limited to two stories. Important improvements were made in the interior. The ceilings of the wards were given the form of an arch, the corners were rounded, the walls oil-painted and polished. Frequent cleaning was thus rendered easy. A large amount of money was expended, and yet, after all, the degree of perfection aimed at was by no means attained, and a high rate of mortality prevails.

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[1] Paper read by Herr Max Junghaendel, Architect, before the Technical Society of the Pacific Coast in the Academy of Science, San Francisco, Cal.

The costly experiment made in Paris gave rise to a reform of hospital construction in France which comes near to a revolution. It found its best expression in the system named after the French engineer, Tollet. The essential features of the Tollet system are that it provides for the division of the sick into small numbers, and of their placing in one-story buildings raised high above the ground. There are quite a number of hospitals built after the Tollet system. I mention here only the military hospital at Bourges, and the civil and military hospital in Montpellier. In recent years the Tollet system has been utilized for new hospitals in Paris, Havre, Epernay; for a new hospital in Madrid, Spain, and also for one in America — the Army and Navy Hospital in Hot Springs, Ark.

The first great hospital founded in America was the Pennsylvania Hospital, in Philadelphia. It was Benjamin Franklin who aided in securing its charter, as far back as 1751.

The general hospitals of a permanent character built before the middle of the present century — the Pennsylvania Hospital, the New York Hospital, Massachusetts General Hospital — were upon the block, or corridor, plan. The Philadelphia Episcopal Hospital and the Boston City Hospital were the first permanent ones in America having detached pavilions connected by corridors.

Soon after the beginning of the Civil War extensive hospital accommodations became necessary. The necessity of frequent changes of location developed a remarkable system of temporary structures. The essential feature of this system was the barrack plan of long wards in one-story wooden pavilions. The results with these hospitals were exceedingly favorable. The doctors became fond of them, and it became one of the dicta of hospital construction that all new hospitals should be pavilions of a temporary character.

A modification of these views, however, is now generally accepted. It is at present regarded as more practical to construct permanent buildings, these being in the long run more satisfactory, economical, and much more comfortable. The results of these experiences gave a great impetus to the progress of hospital reform. Several permanent pavilion hospitals have been built in the last decades.

The most notable of modern hospitals in this country and which we can fully consider as model institutes, not surpassed by any European, are the Johns Hopkins Hospital, in Baltimore, the Boston City Hospital and the Cleveland City Hospital.

The very latest and, I dare say, the least satisfying great hospital is the St. Luke's Hospital in New York, a six-story structure. It is now two years in use, fitted up with the latest improvements in sanitation, ventilation and heating, yet the complaints of medical authorities are numerous, and the rate of mortality among its inmates is high. Its construction is entirely in opposition to the laws and principles laid down by modern sanitary science.

The arrangement of a modern hospital cannot be properly understood without having a clear conception of the principles of sanitary science. I will therefore sketch them as briefly and clearly as possible.

Ailment is decomposition. The highest degree of decomposition is death. There must be agents which start and accelerate this decomposition, but also agents which can diminish and stop it, restore and preserve health. Sanitary science has to do with these evil and good agents alike. It is the aim of this science to study these agents and to find means to prevent the developing and spreading of the evil, and to enhance the action and effect of the good ones.

It is indeed to the credit of the last decades that we fully understand the nature of those agents which are the generators of disease, and which are differently named — germs, bacteria, bacilli, miasma, etc. We are on the verge of great advances in the knowledge of the essence of these invisible atoms, which are man's worst enemies, and to the attack of which it is our fate finally to succumb. Of course you all have heard the names of Billroth, Pasteur, Lister, Koch and others who have taught us to recognize these microbic beings. We know to-day that they are omnipresent and have a great septic and spreading power in places filled with decomposition and foul air, and, on the other hand, that they, as all evil-doers, cannot stand pure air and strong light, those best health-restoring and preserving factors. Hospitals have ever been the preferred resorts of these contagious germs of diseases. The old-fashioned hospital cultivated them, and, indeed, the question raised by an English authority about thirty years ago, whether hospitals have not destroyed more lives than they have saved, seems in many respects to be justified.

The tendencies to weaken the strength of these evil influences, eject and kill the germs, have resulted in the modern hospital, which is as opposite to the old type as day is to night.

Bacteriology teaches that there is a specific form of germ for the different manifestations of ailment. Patients suffering from different ailments are therefore segregated and treated in different buildings. These buildings are separated from one another as completely as possible. In order to prevent spreading of germs from one story to the other, the stories are also completely separated. In cases where it is feasible, superposition of stories, even of two, is avoided. Sanitary science considers the one-story pavilion the ideal one, not only because it prevents the spreading of germs, but also because it allows an unobstructed circulation of air and a greater access of sunshine.

Air to the healthy and sick man is as necessary as food, even more so. In order to remain or become healthy, man requires a certain quantity of air. This quantity must be provided either by natural, or if the circumstances do not allow this, by artificial ventilation — that is, either by opening the windows or by a system which purifies, dries, cools or warms the air, and at certain intervals and in given proportions regenerates the air, which, by passing through the lungs of man, has become degenerate and foul. One product of respiration is carbonic acid. Its percentage fixes the measure of impurity and odor. Its normal ratio is three to four parts per ten thousand. If there are six to seven parts of carbonic acid per ten thousand parts of air, a faint odor is perceptible. Good ventilation is the securing of a change of air, so that the latter may be diluted to its standard ratio. We must supply so much air that an occupied ward is free from any perceptible odor to a person entering from outside.

It has been calculated by the best authorities that to attain this there must be a supply of at least 4,000 cubic feet per bed and per hour. To change the air more than three times in an hour gives draught and discomfort to the patient. If we change three times, then the constant minimum air-space required per bed is one-third of 4,000, that is, 1,333 cubic feet. This is one of the fundamental numbers in the calculation of the modern hospital system.

Experiments have been made in exceptionally high wards. The chemical examination of the air taken from different heights has shown that above twelve feet there is little or no mixture or movement in the air. The space above twelve feet is therefore of little value as ventilation space. Additional height, of no value, adds only to the cost of construction, makes cleansing and warming more difficult. Why, therefore, make the ward much higher than twelve feet?

Empirically, I may say sentimentally, we have found long, long ago that a twelve to thirteen-foot story is the most practical and comfortable one, and now the doctors prove experimentally that we are right. The average English, American and German rule for the height of a ward has ever been thirteen feet, and I suggest that we stand to it. The French system demands twenty-five feet. That is undoubtedly unjustifiable, excessive and impractical. It reflects on the megalomania characteristic of Latin races since the existence of the Roman Empire. If we accept an air-space of 1,333 cubic feet and a height of 13 feet, we get a floor-space of nearly 103 square feet. If we reckon 7 feet a good average wall-space per bed, we get the half-breadth of the ward with 13 feet. We thus see that the number thirteen, usually unlucky, plays quite a part in the modern hospital system. If we compare these measures with those of the existing hospitals, we indeed find that they represent the good average, and precisely those adopted in model institutes.

I resume: The germ theory is responsible for the general arrangement of the modern hospital, and the air fixes the dimensions of its principal buildings, the wards. What influence has the other important agent, the sun?

It is also to the credit of the last decades that the great restorative and germ-destroying power of light has been fully recognized. We always knew that old Sol is the greatest competitor of the doctors. We have an old saying in German, "Where the sun is not, the doctor ever is." But to employ the sun rationally and scientifically that is the result of the very last years. You may have heard of the hospitals recently established in southern countries which make a speciality of sunlight baths and cures for all kinds of ailments. The latest developments are the light cures, effected by the agency of electric-light. It is modern tendency and now an axiom to make the greatest possible use of the sunlight in hospitals. For this reason the direction of the oblong ward is to-day invariably from north to south. All accessories and accommodation rooms belonging to a ward are arranged at the northern end, the eastern and western sides are unobstructed and provided with as many windows as possible. The south side is occupied by a sun-room of either square, octagonal or circular shape, affording the full benefit of the morning sun as well as of the noon and afternoon sun.

In order to get more sun directly for the patients, the wards themselves have been given square, octagonal and circular forms. Other advantages are claimed for these forms; greater exposure to air-currents, better ventilation, facilities in the service, etc. The sun, therefore, determines the direction and form of the ward.

I resume: Sanitary science has laid down as principles and axioms: —

First. — To separate the hospital buildings as much as possible from one another.

Second. — To make them as low as possible.

Third. — To make them as simple as possible.

This is done in order to prevent the spreading of germs and other septic influences, to allow the free circulation of air in, around, below and above the wards and the greatest access of sunlight.

It is the duty of architects to do justice to these principles by an appropriate arrangement, construction and decoration of the hospital. The adaptation of these principles is naturally local.

We have come now to the kernel of our subject: How to build a good, modern hospital in San Francisco?

I took a lively interest in this question as editor of a forthcoming publication on modern American architecture, because I am convinced that the general, climatic and topographic conditions favor here, perhaps more than anywhere else, the erection of a modern hospital. San Francisco is a rich community, willing to spend millions on grand boulevards and other embellishments, and no doubt she should consider it a paramount duty to build first of all a hospital which can compare favorably with other institutions in existence. Am I not right? And are the prospects bright? San Francisco further

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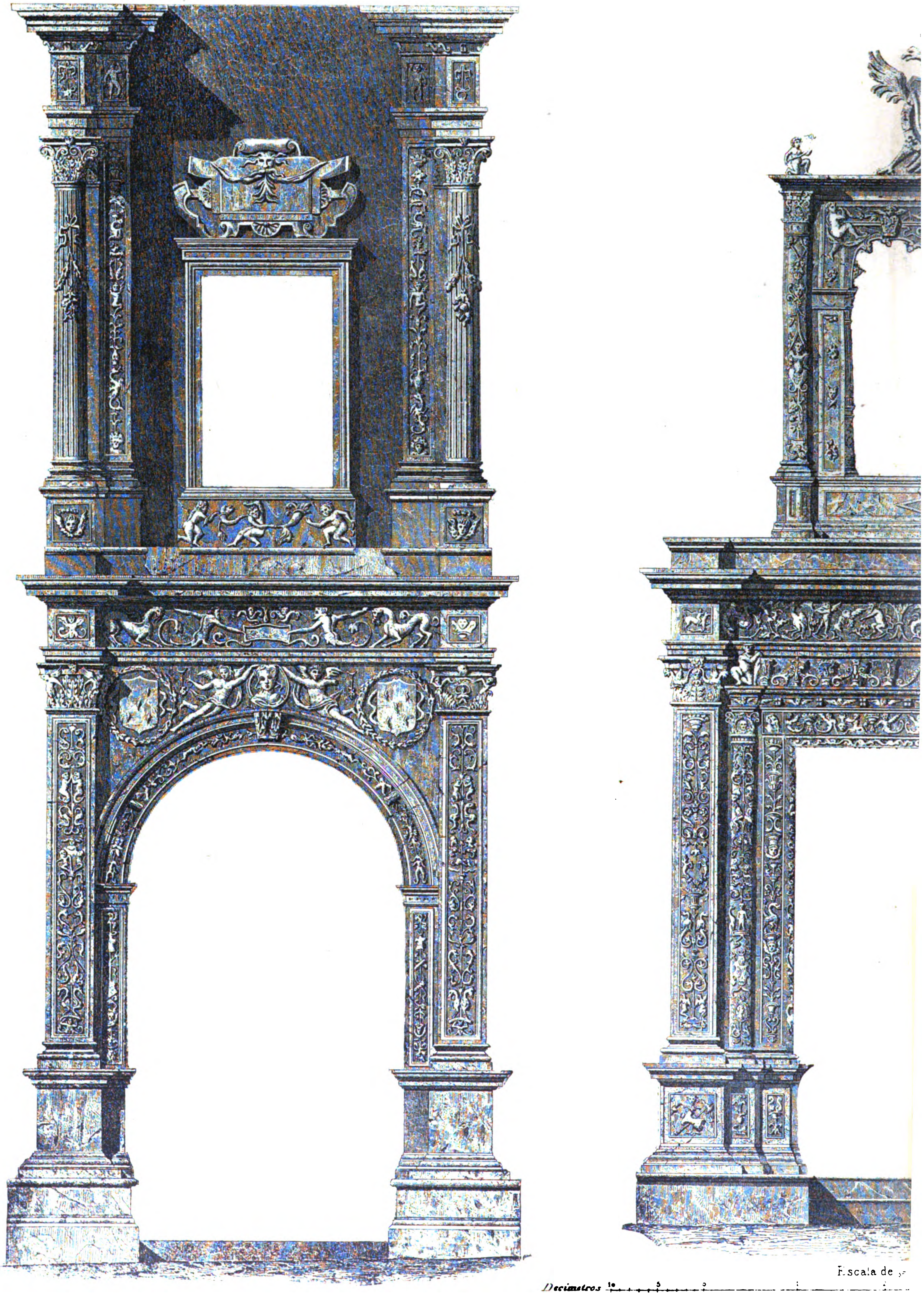

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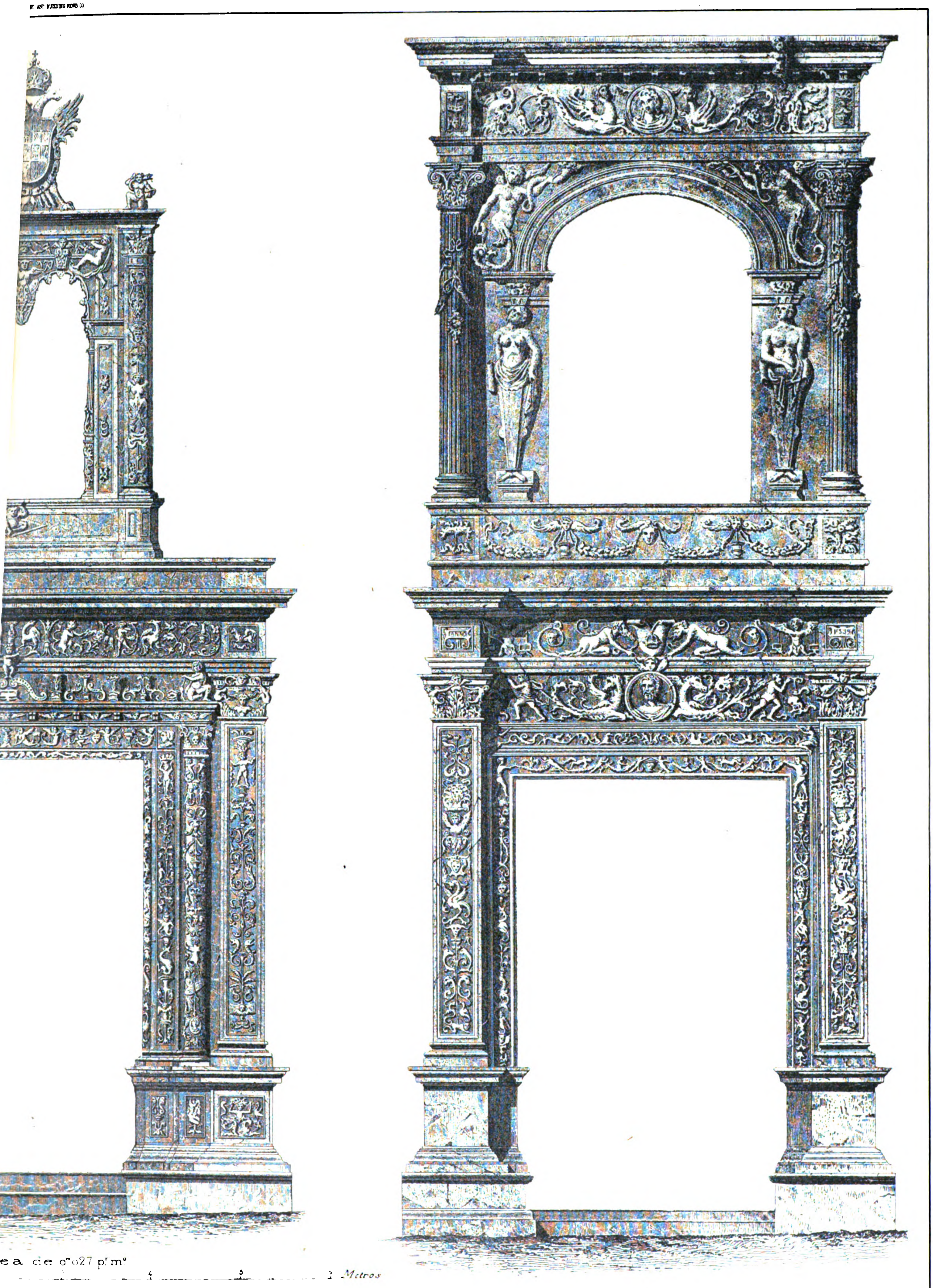

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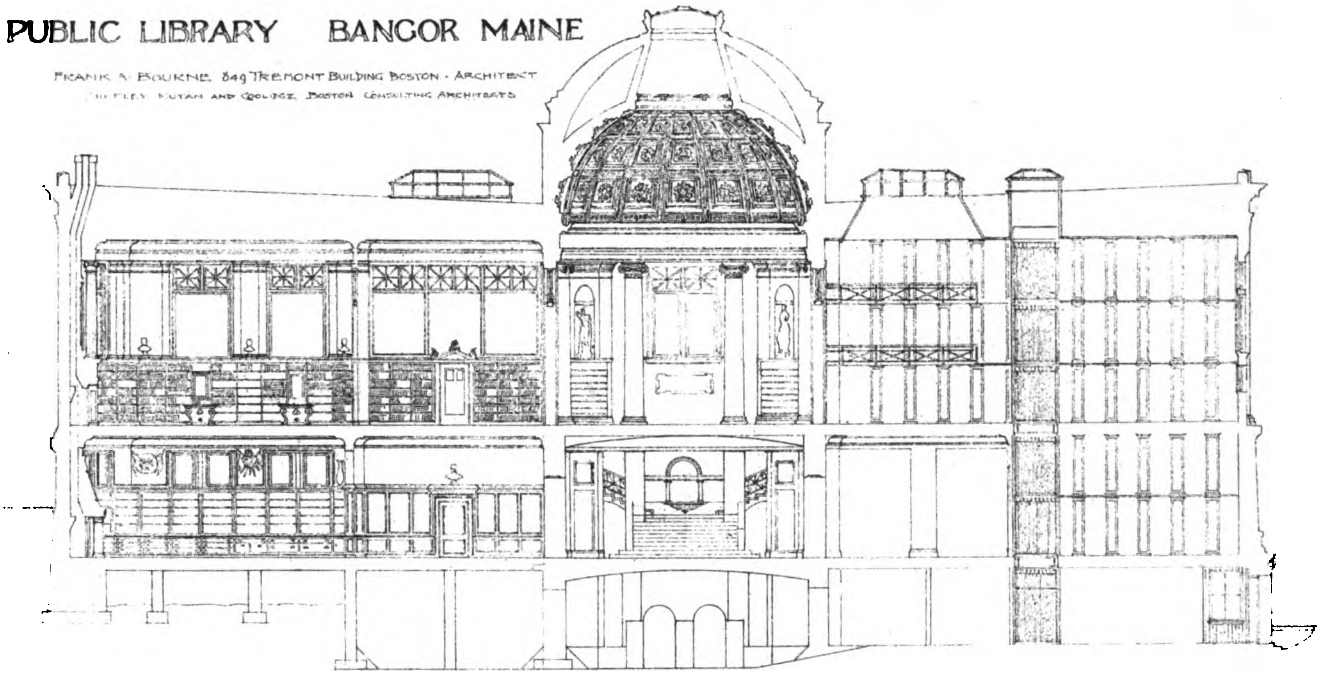

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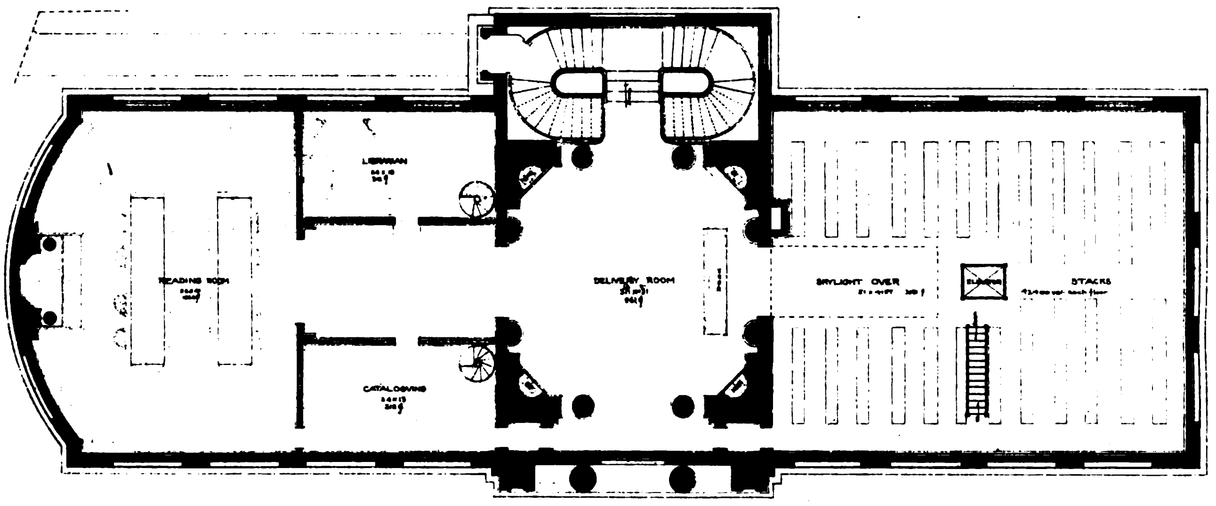
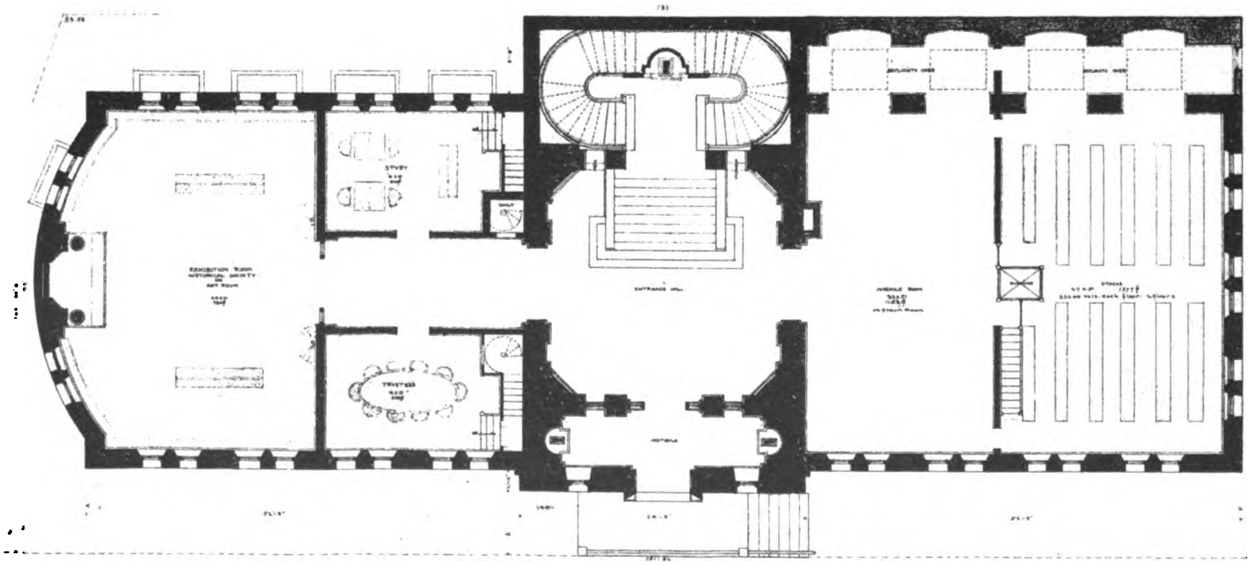


MAIN FLOOR PLAN



GROUND FLOOR PLAN

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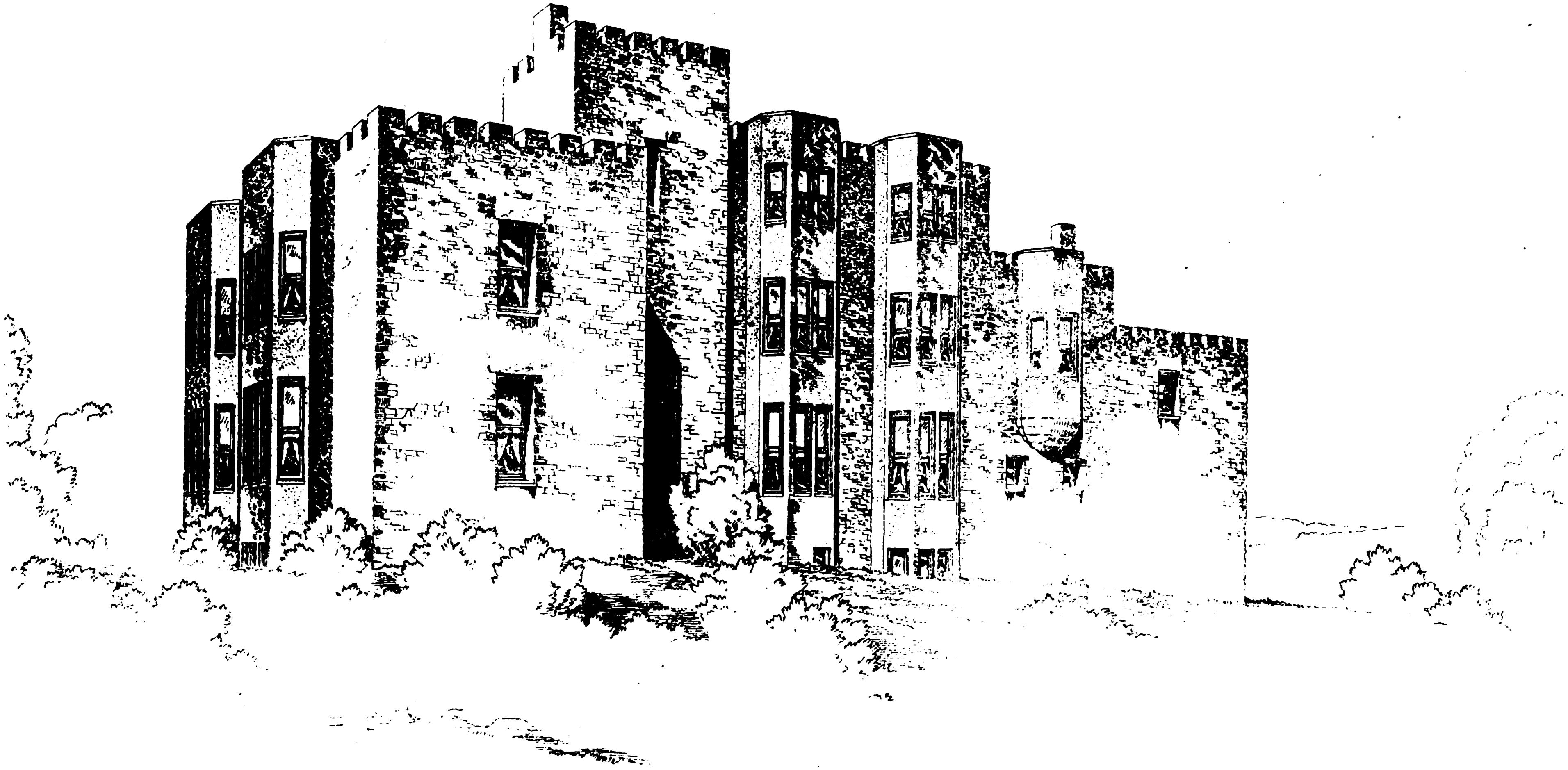
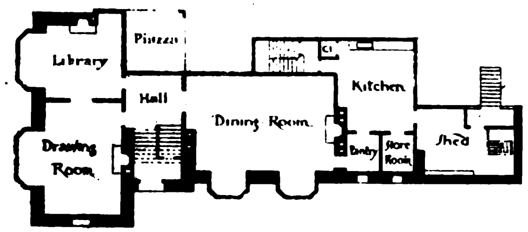


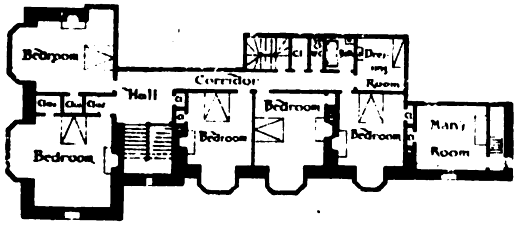


First Story Plan.

"BRANDON"

HOUSE FOR MRS. MARY M. ROPES, LINCOLN, MASS.

T. M. CLARK, ARCHITECT.



Second Story Plan.

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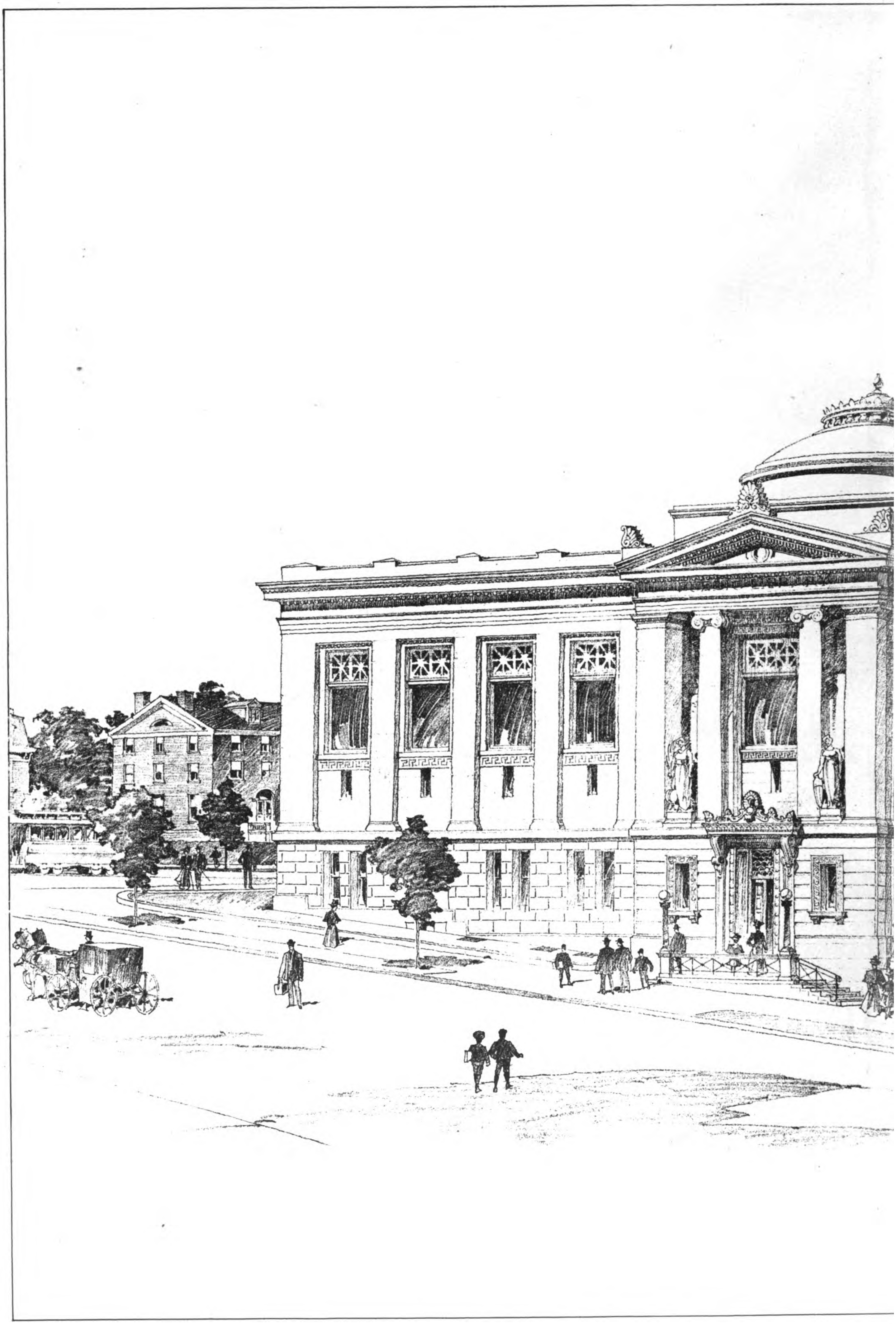

ACCEPTED DESIGN FOR THE P

FRANK A. BOUR

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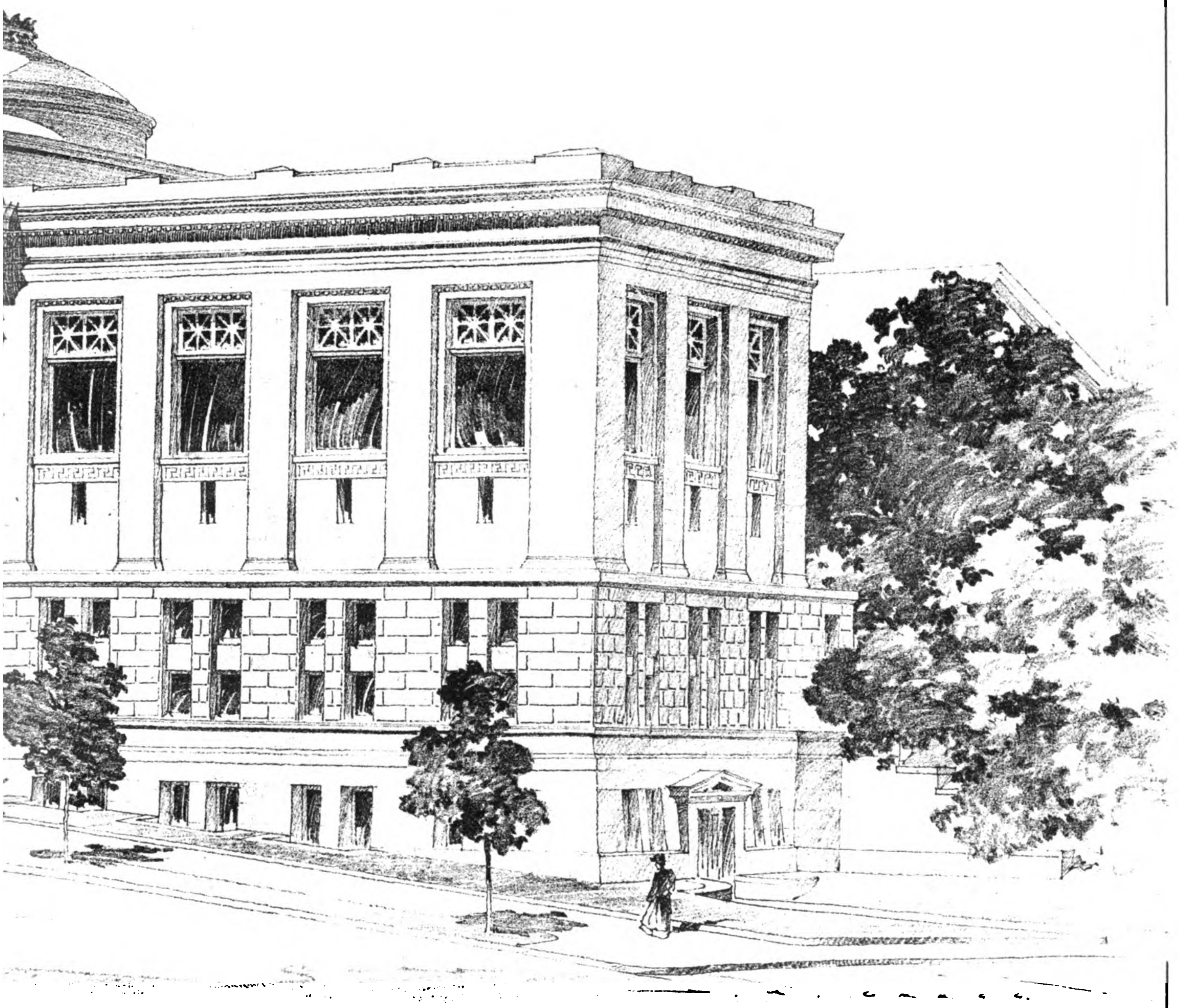

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enjoys for the greater part of the year a climate which is unsurpassed. Natural ventilation can be used here extensively. The sun, never oppressive, will play here a greater part than in any other locality, and sites should be found here which comply with every requirement. No doubt a hospital should be erected here that should be a feature in my publication.

The site is naturally the first question of importance. It undoubtedly should be outside of the city, beyond the congested districts, yet not too far from the centre. The ground should be open and yet sheltered from strong winds and heavy fogs. It should be perfectly level in order to secure the most economical and perfect hospital construction and service. Does the proposed site for the new hospital on the Almshouse tract answer these requirements? I hope you will, afterwards, freely indulge in a discussion in regard to this. The proposed site is rather far from the centre and is to be approached by a steep road. The actual building site is excessively sloping and fully exposed to the ocean winds and fogs, and with a mountainous background cutting off the morning sun and obstructing the currents of the winds and favoring condensation of fogs.

After having satisfactorily settled the site question, it is of interest next to ascertain the size of the hospital and the number of patients in proportion to the population and to the site.

English authorities assert that there should be four beds to every 1,000 inhabitants. In America it is estimated that 2 per 1,000 should be ample for strictly general hospitals for the poor. According to this rule San Francisco having to-day 350,000 inhabitants, in ten years perhaps 450,000, should provide hospital accommodation for at least 700–800. It is modern tendency not to crowd too many sick on one spot and to segregate different classes of patients in special hospitals. Hospitals of 400 patients constitute for administrative and sanitary reasons to-day the maximum of congregation of human suffering on one spot. I would, therefore, suggest that San Francisco should build hospitals of that size, one of 400 for the present, and the other when urgently required. A similar proposition has been made by, I believe, Dr. Ellinwood, who acted on the jury.

There are no reliable data for determining the correct proportion of the number of patients to a given site. In German hospitals we find 50 to 80 patients to the acre. In the English hospitals 100 to the acre, and in modern French hospitals, after the Tollet system, 40 patients to the acre.

Having definitely settled this question, we can start the planning of the hospital proper. The broad purpose of the City and County Hospital is, first, to give relief to the sick poor, and second to advance medical science by giving the students of all medical colleges ample opportunity for practice and research. Therefore, are required:

1. Buildings for the care of the sick: the wards.
2. Buildings for medical practice and research: operation-rooms, surgical amphitheatre, pathological laboratory, morgue, etc.
3. Buildings for administration.
4. Buildings for service: drug-store, kitchen, power-house, laundry, etc.
5. Buildings for housing the staff and help.

All these buildings have different functions, but they must be brought into due proportion and relation to each other. They must form an organic *ensemble*, with the administration building and the wards as the principal features. The other buildings are accessories and must be properly located in strict regard to their purpose. All buildings must be connected with the administration center by open corridors and subways.

The administration building has been usually given undue prominence in regard to dimensions. It has been the practice to arrange in it not only the offices for the external and internal management and the housing of the superintendent, but also that of the extensive staff. This is certainly wrong. This building should be exclusively reserved for business and, perhaps, the habitation of the superintendent. It should be as contracted as possible, so that it may not become an obstruction in the way of light and air, as it usually is.

In its near neighborhood and under easy control of the superintendent should be located, yet distinctly separated from one another, the homes of the extensive male and female staff, provided with all the comfort and privacy to which these public servants are certainly entitled.

Of paramount importance is the appropriate arrangement of the wards. Whatever plan may be adopted, there can be no departure from the now general arrangement of placing the wards north and south and parallel to each other in two wings surrounding a central garden. The distance between the single wards should be at least three times the height of the elevation. Each ward should be a small and yet complete hospital in itself, and independent from the others. The staff and patients of different wards should not come in personal contact nor be compelled to pass through other wards. The wards are to be divided into medical, surgical and contagious wards for both sexes, and maternity and children's wards. Each class of these wards has its specific inner arrangement. The medical authorities have therefore to determine beforehand, by statistics on hand, how many wards are to be devoted to each class of ailment. That decided, the wards should be appropriately placed. The surgical wards should be in easy connection with the operating-rooms and amphithetre. This building requires a northern aspect and direct access from the outside, independent from the hospital proper. These requirements determine its location on the north side of the ground, and necessarily also that of the surgical wards.

The maternity ward, one of the most important in a hospital, should be given great attention. It should enjoy the utmost isolation, privacy and quietness, and be located near the homes of the staff. The same is demanded for the children's ward. The contagious wards must be entirely separated from the hospital proper, and to the windward of the site, where also should be located the morgue, the power-house, the laundry, the stable, etc.

The kitchen department should be as central as possible for perfect service, with due regard to the removal of the inevitable odors produced. The same is required in regard to the ventilation and heating plant. Ideal as the climate of San Francisco is for the greater part of the year, yet there are months when the air is filled with an excess of moisture. For these periods a good ventilation and heating system must be provided. The air should be supplied from beyond the plant toward the windward by a draught and duct system, and removed by aspirating air-shaft with forced draught, electrical fans, etc. Although the hot-water system is the best, it would not do for such an extensive hospital, which is heated in the most effectual and economical way by the agency of steam, easily transmitted over great areas. The method of heating by indirect or floor radiation, adopted in Hamburg and having great virtue, should be earnestly considered.

If there is reason for any building more than any other to be constructed of fireproof material, it certainly should be the hospital, the home of helpless people. Tinder-boxes of combustible material, dangerous to life and limb at best, should ever be frowned upon when suggested for such purpose. A hospital should be, in fact, absolutely fireproof. The improvements of late in this line render this comparatively easy. Fireproof floors, fireproof partitions and ceilings, metal door and window finish have now entirely replaced wood. Brick, plaster, steel and stone only should be used. The best building material is well-burned brick for the interior, and glazed brick for the exterior, walls. The fire-hose can then make short work of all the microbes that may have taken lodgings there. Any diminution in the death-rate would be a full reward for the extra outlay.

In regard to the artistic treatment, I desire to say: The modern hospital cannot possess a monumental character, at least not an imposing one. Extreme simplicity, which need not and should not be inartistic and monotonous, is essential. Any projecting parts, bays and cornices in the exterior which may prevent the free circulation of air and full access of sunshine, and any decoration in the interior which may allow accumulation of dust and the hanging on of germs, should be avoided.

A hospital is usually the last chance a sick man likes to take. The dread of entering a hospital is the result of tradition regarding the dangerous state of the old hospitals, which were nothing short of death-traps, and gruesome as a prison. The modern hospital should be in every respect the opposite. It should be bright and cheerful, in all its simplicity attractive and charming. Architectural relief and ornamentation being practically precluded, we must fall back on coloration. With glazed, enamelled bricks, nothing is easier than to produce coloration of a light and varied character. In designing a model hospital we are not fettered by prototypes. It is an entirely new architectural problem, and essentially modern, because it calls for the expression of a great and useful modern idea in the most simple and straightforward form. The opportunity is given to produce a piece of modern architecture, I mean of *that* architecture which is the logical and practical fulfillment of modern requirements and its beautiful expression in characteristic forms. We are tired of old patterns, with their meaningless decoration, which may be imposing, yet are also impractical and uncomfortable. We long for something modern, rational and substantial.

It is my business to look for such kinds of architectural creations, and it is more or less my duty to take an interest in competitions which may produce designs for such creations. I regret to say that this competition has not been conducted in the interests of the architectural profession and of the community. Concise and equitable conditions to guide the competitors were lacking. The time allowed for preparation of the plans was inadequate. The jury was incomplete and therefore unsatisfactory. The architects declining to serve on the jury did more harm to the profession and the community than good, for the new City and County Hospital, as the first structure to be commenced under the new charter, should strongly reflect its great power for good and the betterment of municipal affairs.

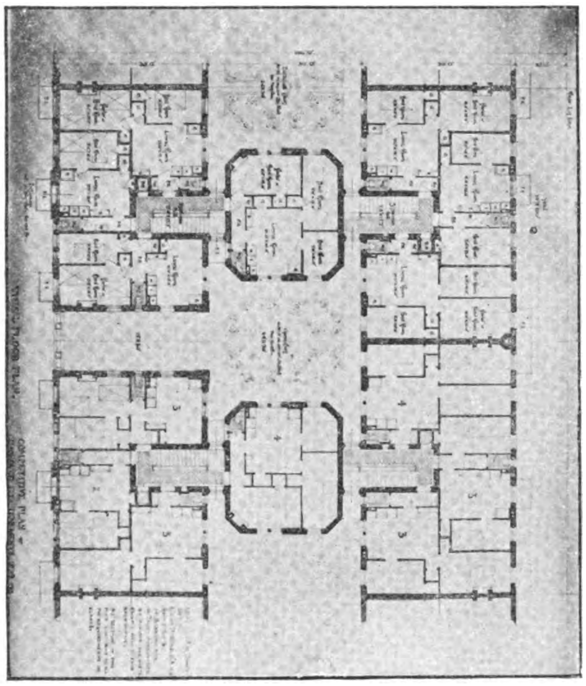
THE CHARITY ORGANIZATION SOCIETY'S TENEMENT-HOUSE COMPETITION.

I ENCLOSE herewith the announcement of the award of prizes in the competition for model tenements authorized by the Tenement-house Committee of the Charity Organization Society. These plans are now on exhibition at 404 Fifth Avenue, forming a part of the Tenement-house Exhibition which has attracted so much attention and which is now being viewed by many persons.

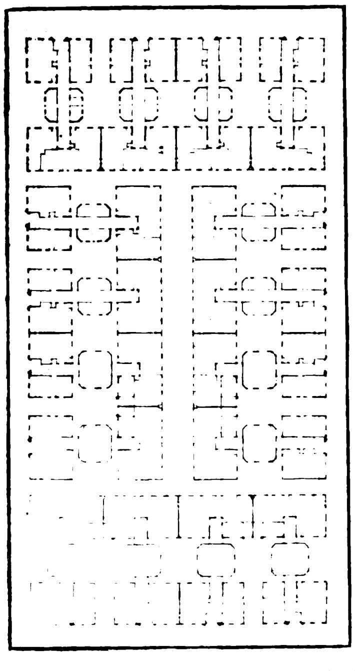
The Jury of Award, consisting of Mr. I. N. Phelps Stokes, Chairman; Dr. E. R. L. Gould, President of the City and Suburban Homes Company; Mr. W. Bayard Cutting, President of the Improved Dwellings Association; Mrs. Roland C. Lincoln, of Boston, who has for many years managed improved tenements; Mr. W. R. Mead, of the firm of Messrs. McKim, Mead & White, Architects, and Miss Lillian D. Wald, of the Nurses' Settlement, finally, after much deliberation, have made their decision as set forth in the following communication: —

The Jury appointed by the Tenement-house Committee to adjudge the plans submitted by architects in the competition organized by your Committee beg leave to report that they have been most highly gratified at the large number of excellent plans submitted. In their opinion no previous competition has ever presented so many varied and valuable suggestions for structural improvement and comfortable living in tenement-houses. The results of such careful and intelligent study by so many architects cannot fail to be helpful in the solution of the whole tenement-problem, which is one of fundamental importance in great and growing cities.

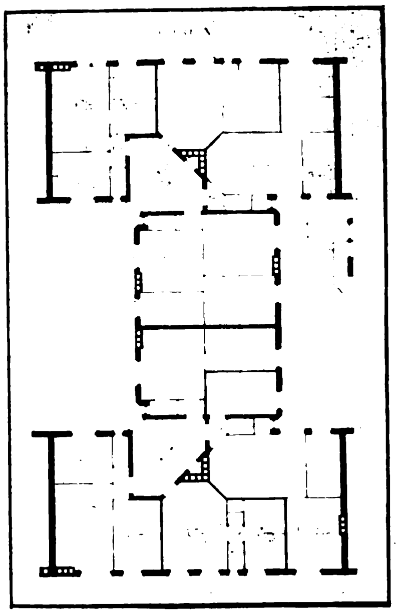
With so many excellent plans before them the Jury have had a really embarrassing task.



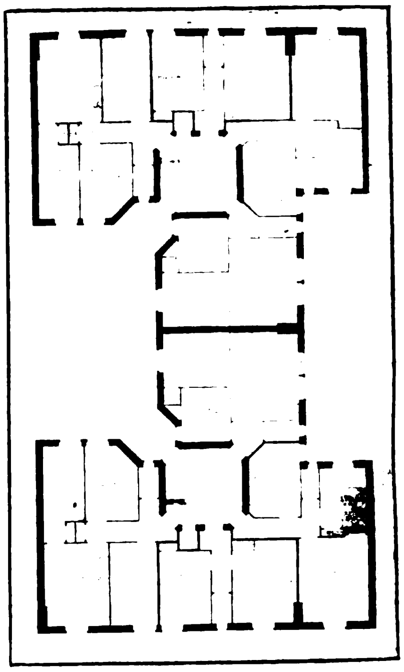
First Prize: R. Thomas Short. — Typical Floor Plan: Third Class: Light and air space, 30½%; clear rentable area, about 60%; 14 apartments: 10 front apartments; 44 rooms; 36 closets; private hall to each apartment. 50′ section of this plan conforms to all the requirements of Class 1.



First Prize: R. Thomas Short. — Plan of city block, 200′ x 400′, showing unit repeated: The top half of the block plan shows all entrances direct from the streets and provides baby-carriage and bath rooms. The bottom half of the plan shows entrances direct from the streets to front compartments and through courts to rear compartments, maintaining the unpierced fire-wall between front and rear compartments. The unit of this plan is a 100′ x 100′ building, but may be subdivided into two 50′ x 100′ buildings, still conforming to all the requirements of the competition. The unit is planned for inside lots. The author has repeated this unit throughout, as per requirements of competition, but suggests that a modification might be better for corner buildings.



Third Prize: Israels & Harder. – Plan of Typical Floor: Class First, fifty-foot unit: Rentable area, 2,734.94 sq. ft. = 54.70% of lot; free air-space (courts) 1,500.25 sq. ft. = 30.01% of lot; walls, partitions and public space, 764.81 sq. ft. = 15.29% of lot; 3 two-room apartments, 3 three-room apartments, 2 four-room apartments: 8 apartments making a total of 23 rooms.

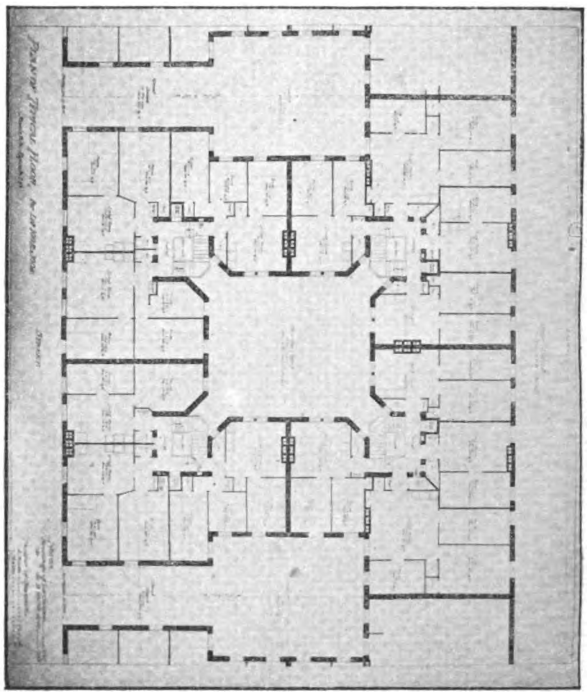


Third Prize: Joseph Wolf. — Rentable area, 2,741.1 sq. ft.; percentage, 54.8; 8 apartments: 2 two-room, 4 three-room, 2 four-room, or a total of 24 rooms.

They have, however, with almost entire unanimity, agreed to *commend* the following plans in the different classes: —

Class 1, 50 feet frontage: —

No. 15 — S. P. Ogden, 954 Lexington Avenue.
No. 17 — Walter P. Banks, Bridgeport, Conn.
No. 44 — O. L. Spannhake, 315 Madison Avenue.
No. 80 — Robert S. Farrington, 382 Mott Avenue.
No. 146 — A. A. Schuster, 37 Kingston Avenue, Brooklyn.
No. 158 — George Pallister, 32 Park Place.
No. 176 — Frank L. Baker, 16 East 23d Street.



Third Prize: Covell & Smith. — Lot 100 feet square. Plan of Typical Floor: Percentage of lot covered, 69.1; percentage of rentable area, 53.5; 4 four-room apartments, 5 three-room apartments and 2 two-room apartments, making 11 apartments in all.

Class 2, 75 feet frontage: —

No. 57 — Elmer C. Jensen, Chicago, Ill.
No. 75 — A. B. LeBoutillier, Franklin H. Hutchins, Albert A. Pollard, Boston.
No. 97 — F. R. Comstock, 124 West 45th Street.
No. 130 — Ward & Davis, 203 Broadway.

Class 3, 100 feet frontage: —

No. 96 — F. R. Comstock, 124 West 45th Street.
No. 129 — Israels & Harder, 194 Broadway.
No. 160 — Creighton Withers, 22 Bellevue Avenue, Newport, and Francis E. Ward, 4 Warren Street, City.

The Jury beg leave to *highly commend* the following plans: —

Class 1, 50 feet frontage: —

No. 10 — George S. Drew, Jr., 304 East 123d Street.
No. 11 — John Bagley Day, 19 West 24th Street.
No. 56 — Adamo Boari, 17 Van Buren Street, Chicago.
No. 125 — Joseph Wolf, 1125 Broadway.
No. 128 — Israels & Harder, 194 Broadway.

Class 2, 75 feet frontage: —

No. 126 — Israels & Harder, 194 Broadway.
No. 144 — George M. Lawton and Robert B. Field, 95 Lenox Road, Brooklyn.

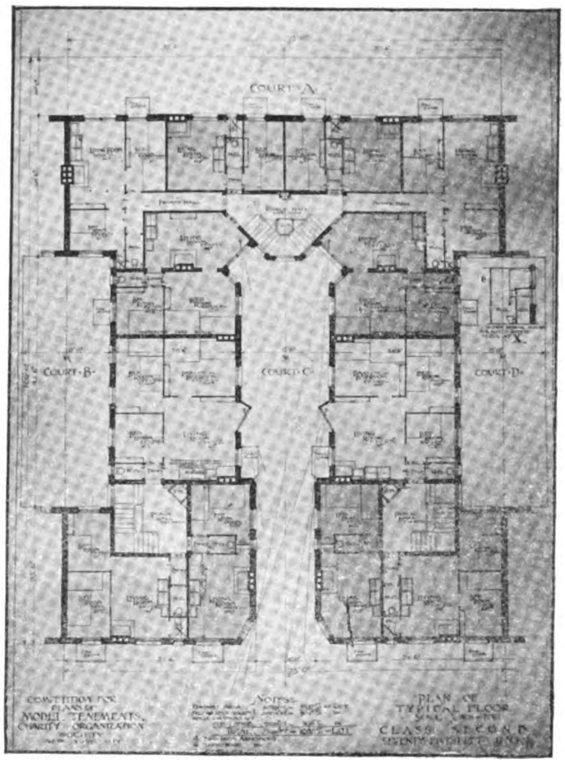
Class 3, 100 feet frontage: —

No. 27 — Stevenson & Greene, Temple Court.
No. 99 — R. Thomas Short, 3 West 29th Street.
No. 107 — Covell & Smith, 152 Broadway.
No. 110 — Frederick P. Kelly and Arthur E. Wells, 124 East 24th Street.
No. 115 — Quinby & Broome, 99 Nassau Street.

From amongst the highly-commended plans the Jury have, with almost entire unanimity and after the most careful, prolonged and painstaking study, finally agreed upon the award of prizes as follows: —

First Prize. — No. 99 — R. Thomas Short, 3 West 29th Street.
Second Prize. — No. 126 — Israels & Harder, 194 Broadway.
Third Prize. — No. 107 — Covell & Smith, 152 Broadway: No. 125 — Joseph Wolf, 1125 Broadway No. 128 — Israels & Harder, 194 Broadway.

In awarding the third prize the Jury felt that three plans presented such equal merits that they were unable to do otherwise than to recognize all of them. One of the members of the Jury has, therefore, generously agreed to donate $100, and the Jury recommend that the Committee add $25, making a total of $225, to be divided equally amongst the three architects whose plans have been bracketed for third prize.


COURT A
COURT B
COURT C
COURT D
COMPETITION FOR PLANS OF MODEL TENEMENTS, CHARITY ORGANIZATION SOCIETY
NOTES
PLAN OF TYPICAL FLOOR
CLASS SECOND

Second Prize: Israels & Harder. — Class Second, seventy-five foot unit: Rentable area, 4,039.8 sq. ft. = 53.87% of lot; free air space (courts) 2,250.16 sq. ft. = 30% of lot; walls, partitions and public space, 1,210 04 sq. ft. = 16.13% of lot: total, 7,500 sq. ft., covering 100% of lot; 4 two-room apartments, 6 three-room apartments, 2 four-room apartments: 12 apartments = total 34 rooms.

It is a matter of great regret that the Jury were deprived of the valuable assistance of Mr. John D. Crimmins, one of the members originally appointed. Mr. Crimmins was prevented from serving by illness which necessitated several weeks' absence in the South.

The Tenement-house Committee is much gratified by the very excellent results that have been obtained by this competition, and feel sure that it will lead to a decided improvement in the type of tenement-house erected in this city. It hopes that all builders, architects and tenement-house investors will take advantage of this opportunity to carefully study the plans now on view at the Tenement-house Exhibition, which will be open every day and evening until February 24. Admission is free and the public are cordially invited. Yours sincerely, LAWRENCE VEILLER, *Secretary.*

SANTA MARIA DELLA PACE TO BE USED AS A MUSIC-HALL. — A Perosi stock company with a capital of $50,000 has been formed in Milan for the performance of church music. The company has bought the Church of Santa Maria della Pace for $19,000, and will turn it into a music-hall. In the spring Perosi's "The Slaughter of the Innocents" and "The Entry of Christ Into Jerusalem" will be performed. — *Exchange.*

SOCIETIES

THE NEW YORK ARCHITECTURAL ALUMNI ASSOCIATION OF THE UNIVERSITY OF PENNSYLVANIA.

THE first annual banquet of the New York Architectural Alumni Association of the University of Pennsylvania was held, February 22, at the Hotel Hungaria, New York City. There were present, besides Professors Laird and Perkins, of the Pennsylvania School of Architecture, thirty-one members, mostly graduates of the last five years. Before the dinner a business meeting was held, at which a proposition to form a general Alumni Association of all graduates of Pennsylvania School of Architecture was favorably considered and also one to publish a periodical giving news of the various members, illustrations of their work, etc., and also the current work of the School. The greatest enthusiasm prevailed through the evening. Professor Laird made an earnest and appealing speech, and short addresses were made by Messrs. Klemann, Miles, Edmunds, Willauer, Wittenburg, Gaisser and Siegel. The toast-master had his sparring clothes on and kept the ball a-rolling. The following New York firms were represented among the members present: George B. Post, Henry F. Kilburn, Heins & LaFarge, Babb, Cook & Willard, Cass Gilbert, Howard & Cauldwell, and the *Architectural Record.* PERCY C. STUART.

ILLUSTRATIONS

[*Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.*]

PUBLIC LIBRARY, BANGOR, ME. MR. FRANK A. BOURNE, ARCHITECT, BOSTON, MASS. MESSRS. SHEPLEY, RUTAN & COOLIDGE, CONSULTING ARCHITECTS.

PLANS AND SECTION OF THE SAME.

"BRANDON": HOUSE FOR MRS. MARY M. ROPES, LINCOLN, MASS. MR. T. M. CLARK, ARCHITECT, BOSTON, MASS.

THIS house is to be built near the top of a hill which forms a portion of a large estate near the village of Lincoln. The estate is mostly unimproved woodland and stony pasture, and the house is to be partly of the local stone, and partly of rough-cast.

DETAILS OF DOORS AND BALCONIES: CASA AYUNTAMIENTO, SEVILLE, SPAIN.

THIS plate is copied from "*Monumentos arquitectonicos de España.*"

[The following named illustration may be found by reference to our advertising pages.]

ATLANTIC CHAMBERS, HIGH STREET, GLASGOW, SCOTLAND. MESSRS. J. BURNET & SON, ARCHITECTS.

THIS plate is copied from the *Building News.*

[Additional Illustrations in the International Edition.]

NORTHWEST VIEW OF THE TROY ORPHAN ASYLUM, TROY, N. Y. MR. H. LANGFORD WARREN, ARCHITECT, BOSTON, MASS.

[Gelatine Print.]

NORTHEAST VIEW OF THE SAME.

[Gelatine Print.]

MAIN PORCH AND A FENESTRATED CHIMNEY OF THE SAME.

REAR TERRACE AND NORTHWEST TURRET OF THE SAME.

ST. JOHN'S CHAPEL, MATLOCK, DERBYSHIRE, ENG. MR. E. GUY DAWBER, ARCHITECT.

REVERSE VIEW OF THE SAME.

HAMMERS LANE BLOCK: LINEN AND WOOLLEN DRAPERS' INSTITUTION COTTAGE HOMES, MILL HILL, MIDDLESEX, ENG. MR. GEORGE HORNBLOWER, ARCHITECT.

ADMINISTRATIVE BLOCK OF THE SAME.

NOTES & CLIPPINGS

WHAT IS THE CAUSE OF THUNDER. — A correspondent writes to the *Electrical Review* as to "What is the cause of thunder, meaning the cause of the noise?" We do not know, he says. The thunder, we know, is a result of the phenomenon we call "lightning," but just what it is has not been as yet adequately determined. The electric discharge produces a variety of effects, physiological, luminous, calorific, magnetic, mechanical and chemical, whose characteristics are more or less well recognized. It is fair to presume that we must hunt for the cause of the noise in the calorific, mechanical or chemical attributes. Most of the authorities in definition say thunder is the noise immediately following a flash of lightning, and is due to the disturbances of the air caused along its path by the discharge, and they let it go at that. It may be that the real explanation will be found partly in each of the calorific, mechanical and chemical actions. A mere disturbance of the air is hardly an adequate reason. We have too little evidence to go upon. The heating effects, so-called, may have some bearing. We know the spark will inflame ether, alcohol and some of the hydrocarbon gases; yet it does not ignite gunpowder except by the help of a wet string which becomes heated. A Leyden jar charged and discharged several times in rapid succession becomes heated. All solid conductors become heated by it. But does air? Mechanical effects are numerous and usually disastrous to any solid body not a good conductor. We are shown by Kinnersley's thermometer that some effect is produced on a body of water, but it is asserted not to be due to any increase of temperature in the air. The chemical effects are most varied. Priestly found a reduction of volume in moist air by passage of the spark (which may be significant), and that the air became acid. Cavendish found this was due to the formation of nitric acid by the chemical action of the discharge. Compound gases are readily decomposed, but air is not a compound gas; it is merely a mixture of oxygen and nitrogen, and neither of its constituents is combustible. One assists combustion of other bodies, while the other is inert in that sense. But we may get some light on the subject yet from the indefatigable army of electrical investigators. Possibly the researches in the liquefaction of gases may help out. In a recent paper on the subject, it is stated that ozone liquefies at atmospheric pressure at a temperature of 135.4 degrees Fahr., and that it is easily exploded. Now, it is well known that the electric discharge produces this so-called allotropic oxygen in great abundance. According to Priestly, the electric discharge effects a reduction of volume in moist air, which would indicate ordinarily a fall of temperature. Moist air is the usual atmospheric condition during lightning flashes. Possibly the stream of innumerable sparks in a stroke of lightning produces a cumulative or intensive effect, first lowering the temperature, then forming ozone, then causing its liquefaction and finally its explosion, or perhaps detonation, which expresses more accurately the terrifying crash following or accompanying a lightning stroke near at hand. This is mere speculation, and the writer gives it for what it is worth.

ENGLISH TRADE-UNION STATISTICS. — Some curious and interesting facts in connection with English trade unions are contained in a report of the Board of Trade which has just been issued. It appears that in 1898 there was a decrease of forty in the total number of trade-unions, due to amalgamations as well as to dissolutions. On the other hand, there was an increase by several hundreds in the number of branch unions. The growth in the membership of trade-unions fell from 8 per cent in 1897 to 2 per cent in 1898 — a phenomenon which is attributed to a decline in the membership of the railway group of unions. Unregistered societies include more than three-quarters of the total members — and more than two-thirds belong to the building, mining, shipbuilding, metal, engineering, and textile trades. A considerable number of unions, chiefly relating to the textile trades, admit female members, and some, but very few, are wholly feminine. During 1898 there was a decrease alike in the income and in the expenditure of the principal unions, as compared with the figures for the previous year. This was due, apparently, to the effect of the great engineering strike. The report gives some noteworthy figures in regard to outlay. It shows that in seven years, out of a sum of nearly eleven million pounds, about 60 per cent was expended on friendly and benevolent purposes, 23 per cent on disputed pay, and the remainder on working expenses. The total amount of the funds held by the principal unions appears to be increasing. At the end of 1892 it was about thirty-five shillings a member; in 1897 it had reached the sum of two guineas, in 1898 it was a little over fifty shillings. — *N. Y. Evening Post.*

MOTIVE-POWER FROM BLAST-FURNACE GASES. — In a recent number of *La Revue Universelle des Mines et de la Métallurgie*, Mr. H. Savage, engineer to the Cockerill Company, treats of the work so far accomplished in the running of gas-engines with the waste gases from blast-furnaces. At the outset it was feared that the solid matter suspended in these gases would score cylinders and valve-seats so severely as to entail a considerable expense in renewals; but by the adoption of separators this supposed difficulty has disappeared, although the gases now used carry with them into the engine some 60 lb. to 80 lb. weight of dust per day. This, however, is in such a fine state of division that, as already stated, it has not proved directly injurious to the working surfaces of the engine, but indirectly it still causes trouble, as it appears that its presence leads to a partial decomposition and decarbonization of the lubricating oils. The Cockerill Company have, however, had a 200-horse-power engine at work for over 18 months, and have supplied several sets of 500-horse-power engines to certain blast-furnaces in Germany. German engineers, however, have deemed it prudent to erect plant for thoroughly washing the gases to be used. Some of the engines made by the Cockerill Company are of very large dimensions, such as the 600-horse-power blowing-engine illustrated in *Engineering* of January 10 last. This has a cylinder 1.30 metres (51.2 in.) in diameter and 1.40 metres (55.1 in.) stroke. The fly-wheel alone weighs 35 tons, and the engines are expected to develop 550 effective horse-power, which will be applied to driving blowing-engines. The blowing-cylinder will be 1.70 metres (66.9 in.) in diameter, and the inlet-valves are of such dimensions that the speed of the air through them does not exceed 10 metres (32.8 ft.) per second. In other cases similar engines are used for dynamo driving. An objection to these motors is their high initial cost compared with steam-plants of equivalent power. — *Engineering.*

FORT AMSTERDAM, NEW YORK. — The block to be torn down for the new Custom-house is bounded by State, Whitehall, and Bridge Streets, and Bowling Green. These are the exact limits of Fort Amsterdam, built by the Dutch in 1626, within which was erected, as a tablet on the door of No. 4 Bowling Green announces, "the first substantial church edifice on the Island of Manhattan." Shortly after Washington's election to the presidency, while New York was still the seat of the national Government, an elaborate presidential residence was planned at public expense on the site of the old fort. A magnificent colonial mansion was begun with Ionic colonnaded front, to be occupied by General Washington and all his successors in the presidential office. Unfortunately, however, before the house was finished, the capital was moved to Philadelphia. Governor Clinton and Governor Jay afterwards occupied the house successively. It was afterward torn down to make room for the block until recently known as "steamship row." — *Exchange.*

POLYCHROMY IN ENGLISH GOTHIC WORK. — Originally, the western façade of Exeter Cathedral was painted and gilt, and this probably preserved the stonework and proved a protection from the effects of the sea air (the English Channel is, as the sea-gull flies, only nine miles away, due south-east), and the variations of climate in even this the most favored portion in that respect in all England. It may be remembered that the famous old Civic Cross at Bristol, erected A. D. 1373, at the intersection of the four most important streets in the old city, was originally treated with color in precisely the same way. The soft oolite (Dundry stone) of which it was built was so richly painted and gilded that it is recorded so late as A. D. 1697 — "No Cross in the United Kingdom exceeded it for beauty." This cross, to the deep regret of every right-feeling person, and to the eternal disgrace of all who had a hand in the transaction, was taken down in the middle of the eighteenth century, and afterwards acquired by the Hoares of Stourton, near Gillingham, and soon afterwards re-erected in their park, falling in recent days into a dangerous state through mistake by the repairers in 1766 in using iron ties that, by oxidizing, burst the coarse-grained oolite at all points. About five years ago, under the careful superintendence of Mr. C. E. Ponting, F. S. A., an accomplished antiquarian as well as a skilful architect of Marlborough, this splendid specimen of fourteenth-century work was, I hope, for ever effectually renovated by my sons and self. — *Harry Hems in Building News.*

HOW THE KANSAS CITY AUDITORIUM WAS BUILT. — Convention-hall is owned by pretty much everybody, and in Kansas City any person who is not a shareholder in the hall can be set down as "nobody." Bootblacks, newsboys, telegraph-messengers, cash-boys, clerks, laborers, motormen, conductors, cow-punchers, and men and women in every walk of life own one or more shares in the hall, "full paid and for ever non-assessable." It is the pride of Kansas City, and every man, woman and child in the community has the incentive of ownership to keep their personal interest alive. The idea of a great hall suitable to hold all sorts of gatherings came about through the annual ball of the Priests of Pallas, which, in 1897, had far outgrown its quarters. It came to the point of giving up this enjoyable event or finding a place large enough to hold it, and with this idea in mind the Commercial Club took the matter up. It was decided that 250,000 shares should be sold or subscribed at the rate of $1 a share. After the first rush of subscribers the expected lull occurred, and some genius suggested a button scheme that not only advertised the hall project, but actually made the movement a success. Each button represented a share of stock, and it eventually came to pass that he who was without a hall-button was socially, politically and commercially dead. Restaurants induced their sale by setting aside a day when the wearers of buttons would be dined free; barbers took turns one week shaving free any man wearing the emblem of his stock in Convention-hall. Even newsboys shined these persons' boots free on one day, so that aside from its ultimate purpose the button more than returned its cost. Business-men had placards printed and fastened them above their desks: "You Can't Talk to Me Unless You Wear a Button." Travelling-salesmen who made the town found it necessary to wear a button in order to do any business. The saleswomen in large establishments were provided with buttons, and every customer who did not were a button was reminded that one was necessary to make purchases. The streets soon glistened with the white celluloid, and the bearer of the dinner-pail and the occupant of the brougham were equal in this, they owned stock in convention-hall and wore buttons to prove it. The button craze died out before the $250,000 required was raised, and a new scheme was introduced. Each business-house was called upon to contribute some of their wares to a general prize-fund. Each prize-ticket represented a share of stock in the hall and sold for $1. The merchants and dealers entered into the spirit of the plan and contributed liberally. K. B. Armour headed the prize list with Armour Rose, a fine Hereford cow, valued then at $1,000, and recently sold for $2,250. Houses and lots, pianos, a Numidian lion, numerous cattle, horses, and buggies, furniture, groceries, fuel, thousands of pounds of flour, packages of starch — every conceivable thing was on the list, and various periodicals and newspapers offered hundreds of yearly subscriptions to their publications. The prizes were valued at thousands of dollars, and many thousands of chances were sold. Before the roof was on, all the money was on hand, and inside the bare, unfurnished building the great prize-drawing was held. — *Correspondence Chicago Record.*

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AT the very time that the bill of the Public Art League for the establishment of a National Art Commission is pending before Congress an extraordinary number of projects have been brought forward which demonstrate better than any argument the pressing necessity for such a commission. Only a few weeks ago we were informed that the "plans had been made" by an ingenious attaché of the Executive offices, entirely unknown as an architect or an artist, for a complete remodelling of the Executive Mansion after a design which, as it was described in the newspapers, would make that beautiful building, we will not say ridiculous, but at least discreditable to American civilization. A few days later we were told that "the plans were ready" for ruining the Capitol by thrusting a "colonnaded pylon" out of the middle of it; and now the newspapers describe to us a "boulevard," which, if the bill now before Congress is passed, will start from the little park west of the Capitol, cut through the Mall, destroying the grounds of the Smithsonian Institution, spoiling the surroundings of the White House, and finally reaching the Potomac at the proposed memorial bridge.

THE reason given for the construction of this street is that it will afford sites for new Government buildings, where they will show to better advantage than they do scattered, as they are at present, at random over the city. It is true that Washington, apart from the Mall and its surroundings, is anything but a fine city, and that Pennsylvania Avenue, connecting the Capitol and the Executive Mansion, is very far from beautiful in appearance; but to make a new street would do nothing to improve the old ones, and Pennsylvania Avenue is undergoing a slow process of rebuilding which has, within the past twenty years, made a very great improvement in its appearance, and is likely to continue the transformation. Meanwhile, the faults of Pennsylvania Avenue do not seriously injure the great groups of Government buildings at each end of it, while a broad street cut through the Mall would certainly do so. In the case of the White House, the long perspective of green behind it, with the river and the hills beyond, all bathed in the tender Virginia haze, give a charm which those who have visited Washington can never forget; while the Capitol would lose half of its incomparable beauty if it were to overlook a wide street, lined with buildings, instead of the splendid expanse of verdure which now does so much to heighten the delicacy of its color and proportions. There are plenty of streets in Washington where public buildings can be advantageously placed, and, if the Government does not wish to pay the cost of Pennsylvania Avenue land for them, the matter will not be improved by cutting new "boulevards"; while there is great danger that the peculiar loveliness and poetry of Washington, which distinguish it from all the other capitals in the world, and which it owes in a great degree to the freedom of its principal buildings from the visible neighborhood of other structures, and from obtrusive traffic, may at any moment be destroyed, through the persistency of some official with a hobby, or, still worse, of some ring of speculators.

NOTICE has been given by Massachusetts carpenters, bricklayers and stone-masons that they will demand an advance in wages May 1. Although this addition to the cost of building will lay a new burden upon architects, it cannot be said that it is unexpected or unjustifiable. Mechanics and their families, like other people, must live, and the increased cost of nearly all the necessaries of life, due to the combination of manufacturers, bears severely on those who must spend most of their income on articles controlled by trusts. It is not surprising that building workmen, hearing of the gleeful condition of the industrial monopolies, one of which, the tin-plate trust, is said to have made about one hundred per cent profit on its capital during the past year, would be glad to share in a prosperity which has, so far, somehow failed to reach them, and have taken the only means that they know of for trying to secure some of it. Whether they will succeed, in the present condition of building business, is doubtful, but they cannot be blamed for making the attempt.

PLANS have been made, as we are told, for a University of the Federation of Labor of Baltimore, in which will be taught, not, as one might suppose, the art of starving non-union men, but such innocuous subjects as "Moral Philosophy, Parliamentary Law, Universal History, English and American History, Constitutional Law, the Organization and Structure of State, County and City Governments, Political Science, American Politics, the Organization of Political Parties in Nation, States and Cities, and Political Economy, embracing the various schools, which will include Trusts and Labor Organizations." As this rather extensive curriculum is to be treated in two one-hour lectures per week, we infer that either all the branches mentioned are not exhaustively studied, or that the course leading to a degree occupies a considerable period. The more modest courses of the existing universities require, on an average, about thirty hours a week of lectures and laboratory or library work, and, at this rate, it would take sixty years for a student of the University of the Federation of Labor to reach his graduation. Very likely it is intended to give instruction in American politics and the political economy of labor organizations mainly by field-work, outside the regular lecture-hours, but Universal History cannot be taught by packing primaries, or pursuing "scabs"; and, with all possible allowance for the valuable effect of these exercises in developing the intellect, we still think that the directors of the new University will find it advisable, if they wish to compete with the older institutions, either to add something to the time devoted to teaching, or to shorten their list of studies.

THE New York University, which has shown signs of vigorous life since the removal of its habitation to the upper part of the city, has in view a novel scheme. A gift of one hundred thousand dollars has been made to the University by an unknown donor, to be used in building a "colonnade" five hundred feet long, facing the Hudson River. This colonnade, or rather, we presume, the wall behind it, is to have one hundred and fifty large panels, on which are to be inscribed the names of "such of America's great men as are deemed worthy of commemoration." The present plan is for the Committee of Selection to receive from the public nominations until May 1 of every fifth year. Every name that is seconded by a member of the Committee is submitted to a certain number, not less than one hundred, of persons of repute throughout the country, and names approved by a majority of these persons are again submitted to the University Council, which must sanction the choice by a two-thirds vote before the name is definitely accepted. It is intended to select fifty names this year, and every five years hereafter. The names of persons born in the present territory of the United States who have been dead at least ten years are alone eligible. Architects, painters and sculptors, "rulers and statesmen," soldiers and sailors, and so on, may hope to have their names immortalized, and we regret to see that "scientists" are included in the list of eligible candidates. We need hardly say that the word "scientist" is to be found in dictionaries of English, if at all, only as a vulgarism, and we trust that the Council of the University will make it clear that the people whose names are to be inscribed in their "Hall of Fame" will not be classified under titles invented by cheap newspaper reporters to advertise charlatans and quacks.

THE project for a new City-hall for New York has come up again, in a bill now pending before the Legislature at Albany. The new bill provides that the new building may cover the block bounded by Broadway, Chambers, Reade and Centre Streets, including the roadway of Chambers Street, which may be arched over, and also including a portion of the City-hall Park. Accommodation is to be provided for the various municipal offices, the surrogates' court and the County Register. This will afford, if well treated, a fine site for the new building, although an expensive one. The idea, however, of carrying Chambers Street through the structure, cutting the most useful story into two entirely separate portions, is hardly commendable, either from the æsthetic point-of-view or that of convenience, and it does not seem at all necessary. If Chambers Street, between Broadway and Centre Street, is to be entirely occupied by the City-hall, there is no real object in carrying traffic through it, instead of diverting it through Reade Street, and the space which it takes up would be of the greatest value to the municipal building. Even the passengers on street cars, bound through Chambers to Centre Street, would have little reason to complain of such a small diversion. The example of the Philadelphia City Building should serve as a warning against any future experiments in carrying streets through the ground-floor of office-buildings, and particularly of those devoted to the complex administration of a great city.

THE New York Rapid Transit Commission has proposed the very sensible plan of combining with the railway tunnels under its charge one or more pipe-galleries, in which sewer, gas, water and steam pipes, and electric-conduits, can be placed, where they will be at all times accessible, without the necessity for digging up the street pavements. It is singular that so obvious an improvement should not have been incorporated with the original plans, but the Transit Commission explains that it did not feel called upon to make provision for anything but the accommodations for the railways, and that, as the municipality controls the laying of pipes, it is the city officials who should make the application to the Legislature for authority to add the galleries to the tunnels. Of course, the Rapid Transit Commission will favor the application, as will every one who is interested in the welfare of the city. The necessity for devising some relief from the present system of obstructing the streets and destroying the pavements whenever a pipe is to be laid or repaired has long been evident, and taxpayers, city officials and stockholders in corporations which own pipes or wires will rejoice together at the prospect of relief from a grievous and perfectly useless burden of expense. The city, if the galleries are built, will lease space in them to the corporations desiring to use them, and some enthusiastic individual reckons that the rents will pay the entire cost of construction, calculated at about six hundred thousand dollars, in a single year.

EVEN with a liberal allowance for enthusiasm in this arithmetic, the probable rental value of a pipe gallery, or of a small tunnel devoted principally to pipes and wires, is so great that we have often wondered why private capital was not tempted into the construction of such tunnels as an investment. Probably no one can say how much money is spent every year in New York in digging up pavements, laying pipes, refilling and repaving, but the total must be well into the millions, and to the saving that would be effected by placing the pipes in accessible galleries must be added the value of the gas and water now wasted by leakage, which could be prevented through the opportunities for surveillance afforded by a tunnel. As at least one-fourth of all the gas which is made for the citizens of New York, and paid for by them, is lost in the ground, and probably one-fourth of the water-tax goes to pay for similar waste, a great indirect economy could be made in these items alone; so that the municipality could well afford to allow such a subway corporation to tunnel the streets, in return for the use of the subways for sewers and water-pipes, and a reasonable rent-charge to gas, steam, telephone, telegraph and electric-lighting companies should pay a good and increasing interest on the investment for an indefinite period.

MR. FREDERICK C. MERRY, a well-known architect practising in New York, died at his house in that city a few days ago. Mr. Merry was born in England, but came to this country when a child, his family settling in Camden, N. J. When a young man, he was employed in laying out a portion of Fairmount Park, in Philadelphia, and gained an extended experience in building and surveying. For a time, he was principal assistant in the office of the late H. H. Richardson, in New York. Later, entering into business on his own account, he executed many important commissions, among them being Chickering Hall, the New York Hospital and the Williamsburg Fire Insurance Company's Building, in New York, besides private and public buildings in other parts of the country.

THE firm of Robinson & Wallace, of New York, builders, which now consists only of Mr. Andrew J. Robinson, assigned a few days ago for the benefit of creditors. As this was one of the most noted firms in the city, its troubles, which we sincerely hope may prove only temporary, have an interest for those who appreciate the anxieties and responsibilities involved in a great building business. The beginning of Mr. Robinson's misfortunes is said to date from his acceptance of the contract for the building of St. Luke's Hospital, four or five years ago. The sub-contract for the marble, of which there was a large amount in the building, was awarded to the owners of a Southern quarry. It is notorious among architects that there is almost always trouble about the cut-stone in a large building, and Mr. Robinson found that the marble was not furnished as he wished it. He was bound by his contract, and in the end, in order to secure materials for carrying it out, he was obliged to purchase the quarry, into which he is said to have put nearly four hundred thousand dollars. This took so much from the working-capital for his proper business, and he was obliged to borrow large sums, the repayment of which at a stated period was rendered particularly difficult by the uncertainties, delays and other disappointments to which a builder is exposed in collecting debts due him, and his inability to meet a note brought in a shower of heavy claims. According to the preliminary estimates the assets exceed the liabilities by more than one hundred thousand dollars, and if the quarry could have been sold, the firm would have been much more than solvent; but it is especially true in building business that the united effect of a number of debts can overcome a much larger aggregate of assets. Besides St. Luke's Hospital, the firm built the St. Paul Building, the New York Hospital, the Havemeyer Building, the East River Savings Bank, and many other important structures, and we trust that Mr. Robinson may yet build many more.

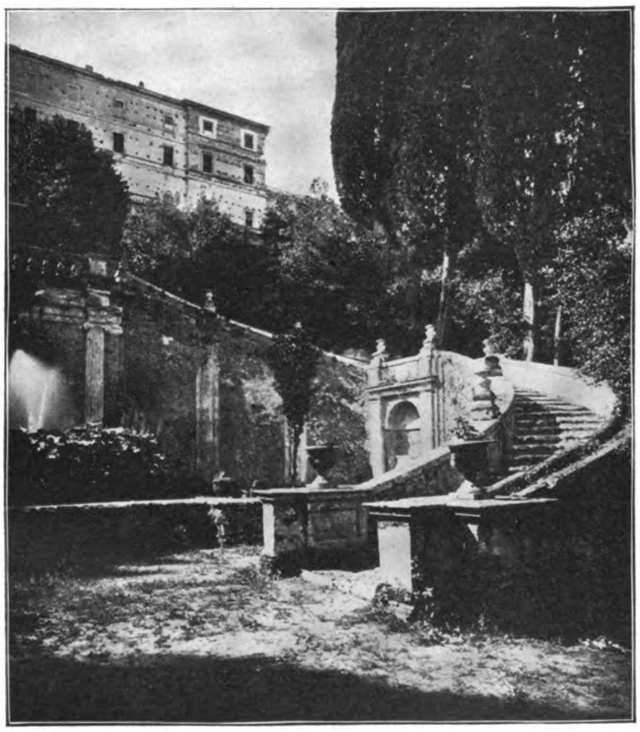
THE lovers of the strenuous life will be glad to hear of the production of a new apparatus, the Mauser automatic pistol, with which, as *Le Monde Moderne* informs us, much more rapid advance can be made in spreading Presbyterian gospel among the gentle and devout Catholics of the Philippine Islands, or in explaining to Dutch republicans the mysteries of British politics, than with the old-fashioned revolver. This interesting "tool," as Sardou calls it, contains a magazine for cartridges, with mechanism similar to that of the Maxim gun, for utilizing the recoil of the discharge of each cartridge for throwing out the empty shell and placing and fixing the next cartridge. All this machinery is contained in a weapon which can be easily held in one hand. The range is a thousand metres, or about two-thirds of a mile. Several shots per second can be discharged, but when set for "prolonged fire" the rate is from eighty to one hundred shots per minute. The bullet, as determined by experiment, will at a thousand feet penetrate an arm and break a shoulder-bone, besides making a hole three inches deep in the vital portions of another person beyond; or, if preferred, at a range of not more than two hundred feet, it will penetrate two men and enter deep into the body of a third. This invention has been welcomed with enthusiasm by the German General Staff, which has adopted it for army officers, and certain American clergymen will no doubt hasten to arm themselves, or their disciples, with it.

THE ITALIAN GARDEN.[1] — III.

Main Alley: Palazzo dalle Ore Qurini, Vicenza.

CLOSELY associated with the water-system was the system of paths — main *avenues* and side *alleys* — which covered the grounds in a formal network, and made them accessible in all parts. And just as the water features followed in general the lines of the axes, which they marked, so the paths followed the axes and served also to mark them. Thus, along the main axis was the principal avenue, which often in a quite complexly beautiful way was literally interwoven with the principal water-course. For in its own course along the main axis, it continually divided and came together again about the principal water-basins and channels, while at other times serving architecturally to connect them above ground when by water-flow they were connected only by subterraneous channels.[2] In the former case its two lateral divisions swung round the basin in segmental curves when the basin was circular, or followed along its sides when bounded by straight lines, always following in formal lines the formal outline of the basin, until these parted halves uniting as one avenue again the latter continued as before along the axis. At some points, as we have seen, the separated parts of the avenue were tied together by bridges, or cross paths, under which the water passed from one basin to the next.

The vista formed by this avenue was, at the farther end of the grounds, finally closed by some prominent architectural feature, such as a colonnade, pavilion, casino, temple, nymphæa, fountain, grotto, or other suitable work of art. In its course from the house portico or the immediate terrace, this main avenue generally descended at intervals by gentle slopes or simple stone steps, or more or less elaborate zig-zag or winding ramps or stairways, to lower and lower levels, the lowest level being, as we have seen, typically the most extensive. Generally, the stairways were open to the sky, but sometimes they were covered by arcades, open colonnades, or pergolas, and they were commonly balustraded, with rows of statues or busts, or urns, pots, or other sculptural objects along the coping of the balustrade. Such a system of balustraded stairways and ramps often formed a most impressive and beautiful whole, and led the eye up very effectively and agreeably to the house above, to which it formed at once the practical and the architectural approach.



Villa d'Este, Tivoli: Stairs and Cypresses.

The other axes were all similarly treated with paths, each closed by some architectural feature (designed with respect to the importance of its situation, but seldom less prominent than a statue), the effect of which was, of course, enhanced by such a perspective approach and enframement.

The paths themselves were edged, often not only by hedges which enclosed the beds, but by walls or simple curbings, and were embellished by statues, hermæ, urns, or pots of ornamental plants, at regular intervals along the sides. Most commonly these were simply backed by the hedge, but sometimes they were set in niches cut in the hedge, or were provided with architectural niches. Often the hedges were clipped so that in section the uppermost part jutted out over the path a foot or more at a height of some five or six feet; and along the paths, sometimes under such an overhanging canopy of verdure, were at intervals stone seats or exedræ, besides sometimes statues at intervals, their white marble standing out well against the deep shadow. Occasionally, notably in the Boboli, the hedges (in that case oak) meet overhead, being clipped so as to form a perfect barrel-vault. Sometimes the hedges were clipped to show various architectural forms (pilasters, for instance), and this was often well done and legitimately done with the idea of giving an effective transition from the purely architectural to the purely horticultural. Especially were niches cut into these hedges, as already stated, to hold statues or hermæ.

Entrance to a Covered Alleyway in the Boboli Garden, Florence.

The parterre proper, generally the lowest terrace, or rather the lowest level of the garden, was cut up by its main axial avenues and series of parallel minor paths into formal beds, repeating in a way the general scheme as a part echoing the whole. The beds themselves, though of general rectangular form, varied in detail both in shape and treatment. Sometimes their individual formal patterns repeated still further the geometric scheme. The hedges with which these beds were bordered were generally of cypress, ilex, laurel, or box, and always clipped into scrupulous symmetry. Generally, these hedges were continuous in plan, except that in hedges of the larger beds, breaks were left for entrance and exit. But sometimes the hedges were discontinuous in plan, forming a series of blocks of equal size. The hedges in certain instances attained enormous height — in the Quirinal Gardens, Rome, 30 feet — and entrance and exit were then had by doorways, simple or arched, cut through the walls of green. The iron gates which one sometimes sees in these hedges seem to have been introduced in more modern times.

Within, the beds were planted with shrubs, flowering herbs, or simply grass. The use of isolated trees or small groups of trees for effective masses, which was such a feature in the French, was never common in the Italian, garden, but the plane-tree or sycamore, pines, oaks, and the semi-tropical palms were occasionally so used. The shrubs were sometimes trained as espaliers or in other artificial forms.

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[1] Continued from No. 1260, page 52.

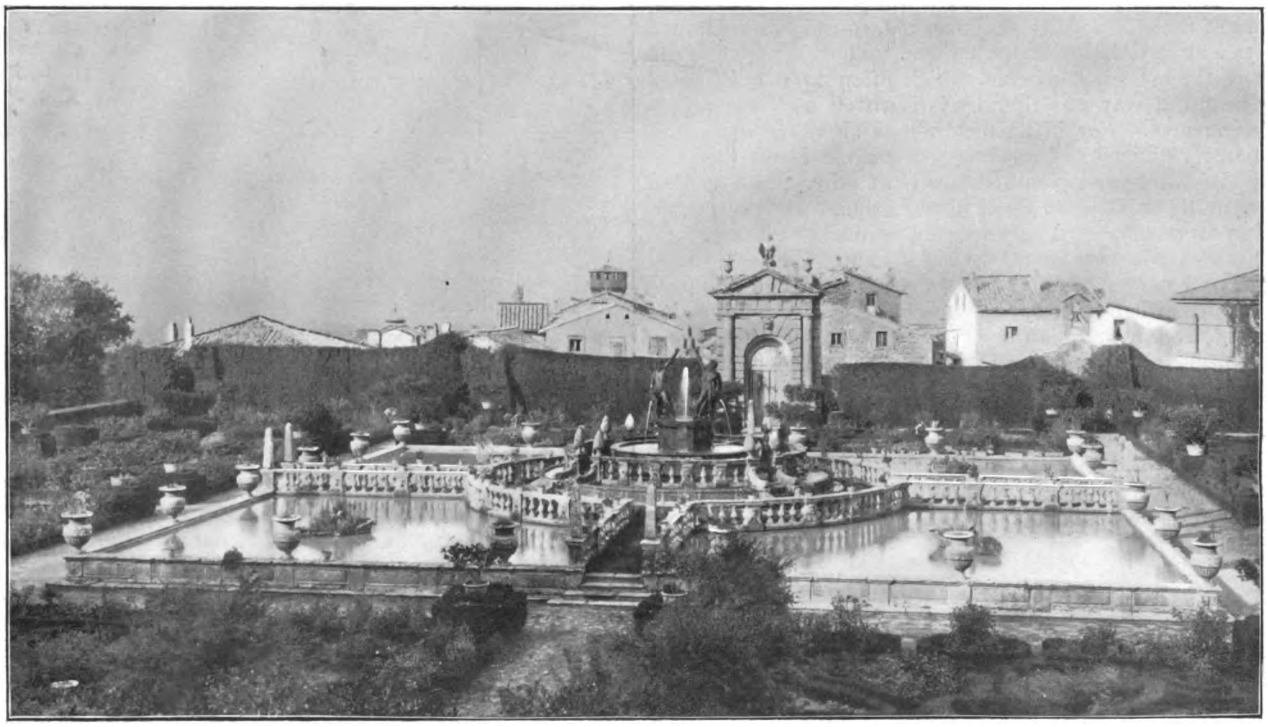
[2] See illustrations in *American Architect* for Sept. 11, 1897, and May 13, 1899.

In the simplest case, the beds were plain rectangles, disposed in regular ranks and files, thus giving full square corners at the intersections of the paths, but these corners were very apt to be either straightly chamfered, or cut by a circumference the centre of which was at the intersection of the centre-lines of the paths, or by the two adjacent sides of a small square; the purpose of such a treatment being to facilitate the visitor's turning of the corner, or frequently also to provide a place for some piece of sculpture, or to fit or balance the curved or rectilinear outline of some feature placed at the centre of the intersection. Most commonly these different forms of corner treatment were combined in the same design, even in the different corners of the same bed, and since this was always done with an eye to formal symmetry, the variation thus introduced was such as to give pleasant alternation and consequent rhythm to the design. It was these intersections, and the termini of the vistas, that were everywhere emphasized, generally by some architectural feature. Even when it was only a matter of flower-pots, the largest flower-pots were placed at the corners. Altogether the commonest form of accentuation was the statue, usually of marble or other stone, but sometimes of bronze (as about one of the fountains in the garden of the Villa Lante at Bagnaia). In some gardens it seems as if there were statues of one kind or another at every turn, — they seem indeed to fill every available space, — statues of old men and youths, statues of maidens, of matronly dames, of children, and gods, and heroes, until by their quantity they often seriously impair the restfulness of the garden's effect. Indeed the garden becomes transformed; no longer truly and wholly a garden, it is rather become primarily a museum of sculpture.

The paths themselves were generally merely neatly-kept plain gravel walks, while, in some, gravels of various colors were combined in the execution of formal patterns, giving the effect of mosaic pavement. The principal avenues in the larger gardens, such as the Boboli, were passable by carriages. Generally they were open to the sky, but sometimes they were given a covered colonnade (or pergola), or a covering of arched trees, which in some cases were allowed to grow naturally, but in others were formally clipped, making a pleached way.

We have now to consider two common features of the Italian garden, already referred to in passing, which are quite characteristic of it as a type, namely, the orangery and the pergola. The orangery was usually either in close proximity to the house or at the farther end of the grounds. In the latter case it sometimes closed the principal vista, as in the instance already noted. It seems to have been a combination of a more or less extensive orange-plantation with an out-house of some architectural claims, in which the orange trees and other tender plants were stored in winter, to be set out again in the spring. At first this house had an opaque roof, but in later times it came to have a glass roof, and was the precursor of our modern greenhouse. Indeed, until comparatively recent times, the latter was still known in England as "the orangery," as many of the old English works on gardening attest. It was often built against a side hill, or an enclosing wall of brick, for protection. The orange-trees were sometimes trellised to give more complete exposure to the sun, and were often trained against a wall, sometimes so that their forms might be reflected in the water-basin near at hand.

The pergola was often used to enclose the orangery, especially in the Genoese gardens, but was by no means limited to this use. It was a sort of open colonnade of which the roof was a trellis covered with vines, and the supports varied from simple wooden posts to marble columns. The whole formed a shady, more or less sheltered arbor for promenade, as well as a cool and pleasant resting-place beneath its leafy canopy, where seats of wood or stone were provided along the sides.[1] Sometimes this was built against a wall from which it was a lean-to, and sometimes it was independent, when the trellis-roof was horizontal. Sometimes the walk through the pergola was practically level, and the floor might be stoned or bricked, but sometimes it was a ramp or stairway; sometimes it was straight in plan, sometimes curved, sometimes turning at right or oblique angles in its course, as when enclosing the orange-plantation. When the plantation was much longer than wide, a cross-trellis often connected the middles of the long sides. The use of pergolas is well illustrated in the garden of the Corsini Palace, Rome. It goes almost without saying that the pergolas formed the chief feature in the vineyards which, when they were the leading element of the garden, gave to the villa the more specific name "Vigna"; as for example, Vigna Papa Giulia.



Fountain at the Villa Lante, Bagnaia, near Viterbo.

We have now considered all the features necessary to the Italian garden as a type. Some, however, of the larger gardens, as the Boboli, provided play-grounds for sports of various kinds, which were the scenes of mild tourneys, of masks, etc., and others, as the Borghese, race-courses. In the Boboli, also, a huge "amphitheatre,"[2] so-called, was the central feature, facing the Pitti Palace.[3] It is reported that in one Italian

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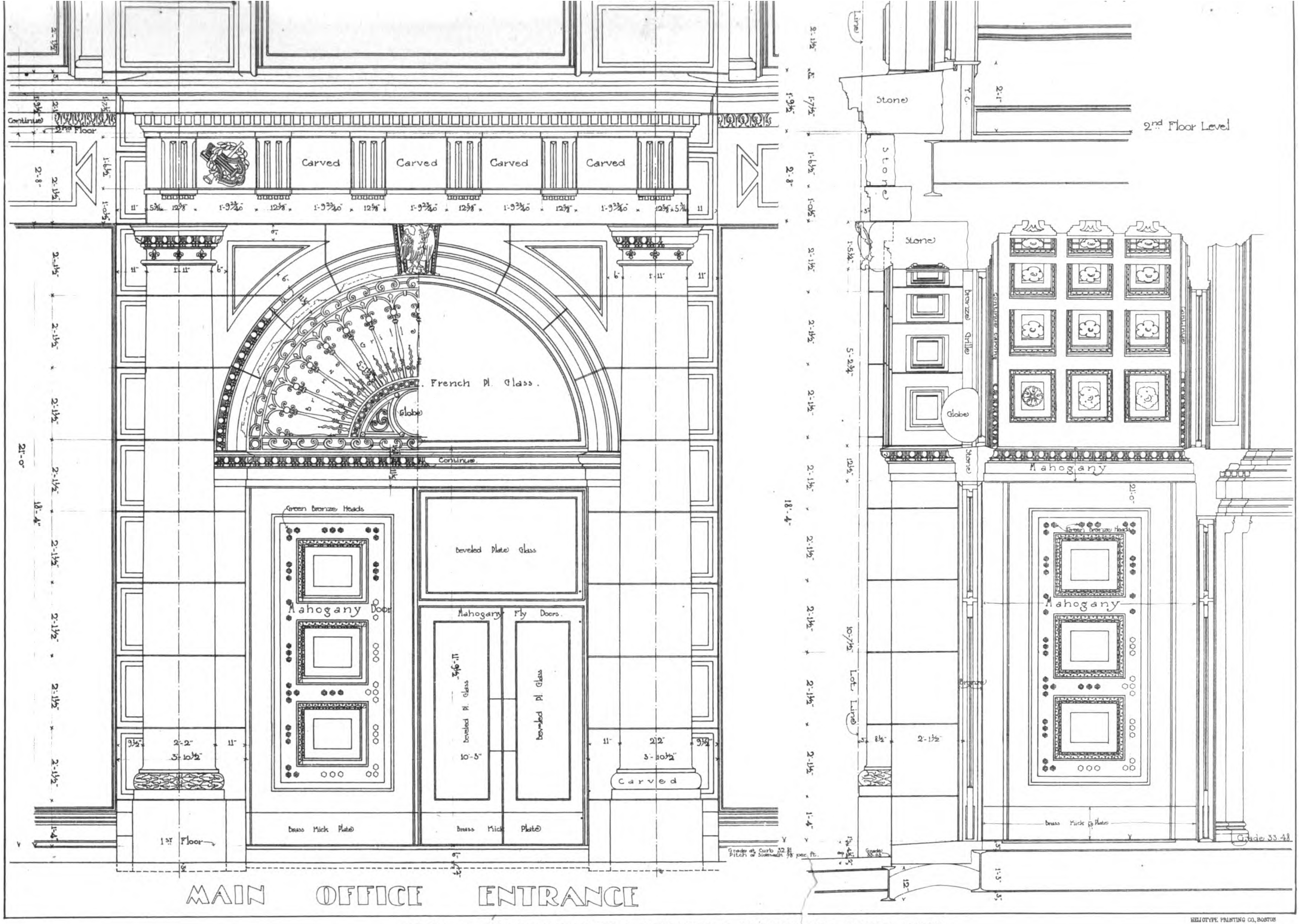
[1] See *American Architect* for May 1, 1897.

[2] See *American Architect* for January 5, 1897, and February 19, 1898.

[3] The ends of this theatre were extended parallel to its shortest diameter, and it was banked by tiers of permanent seats, which were in their turn backed by a row of statues set in built niches (*i. e.*, niches not in any wall, but independent).



DETAIL OF BUILDING FOR THE F. L. AMES ESTATE, BOYLSTON ST., BOSTON, MASS.
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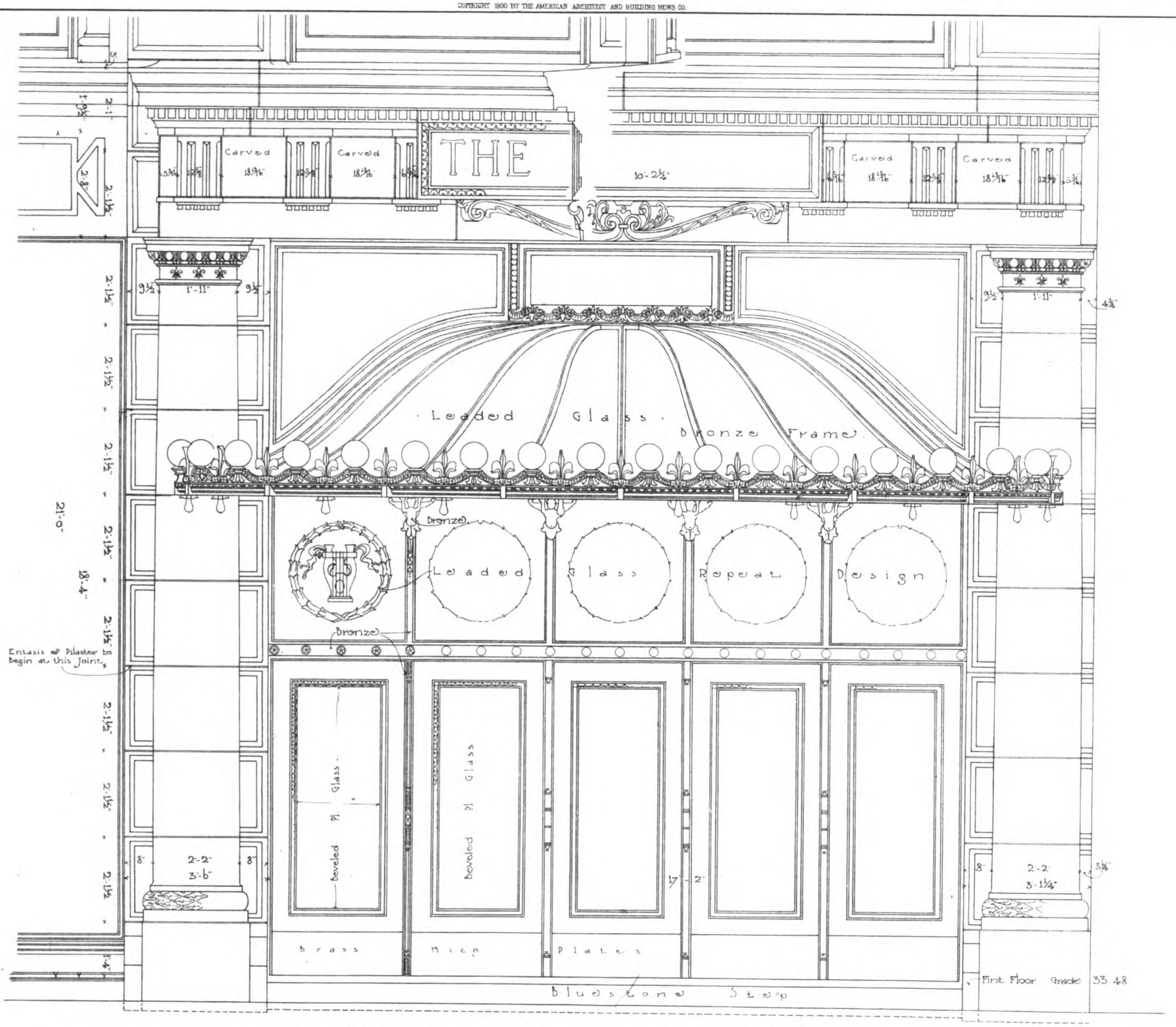
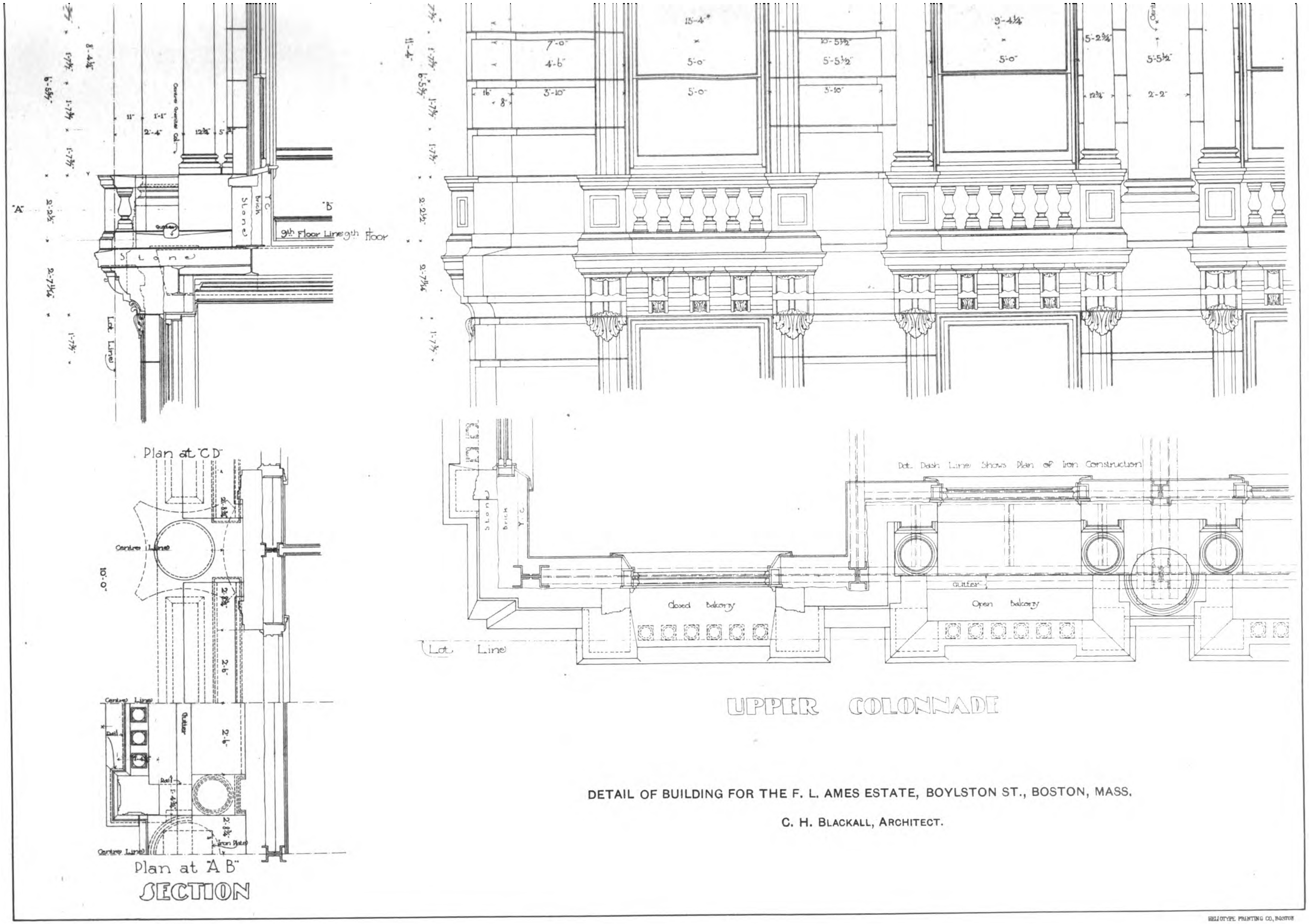


MAIN THEATRE ENTRANCE



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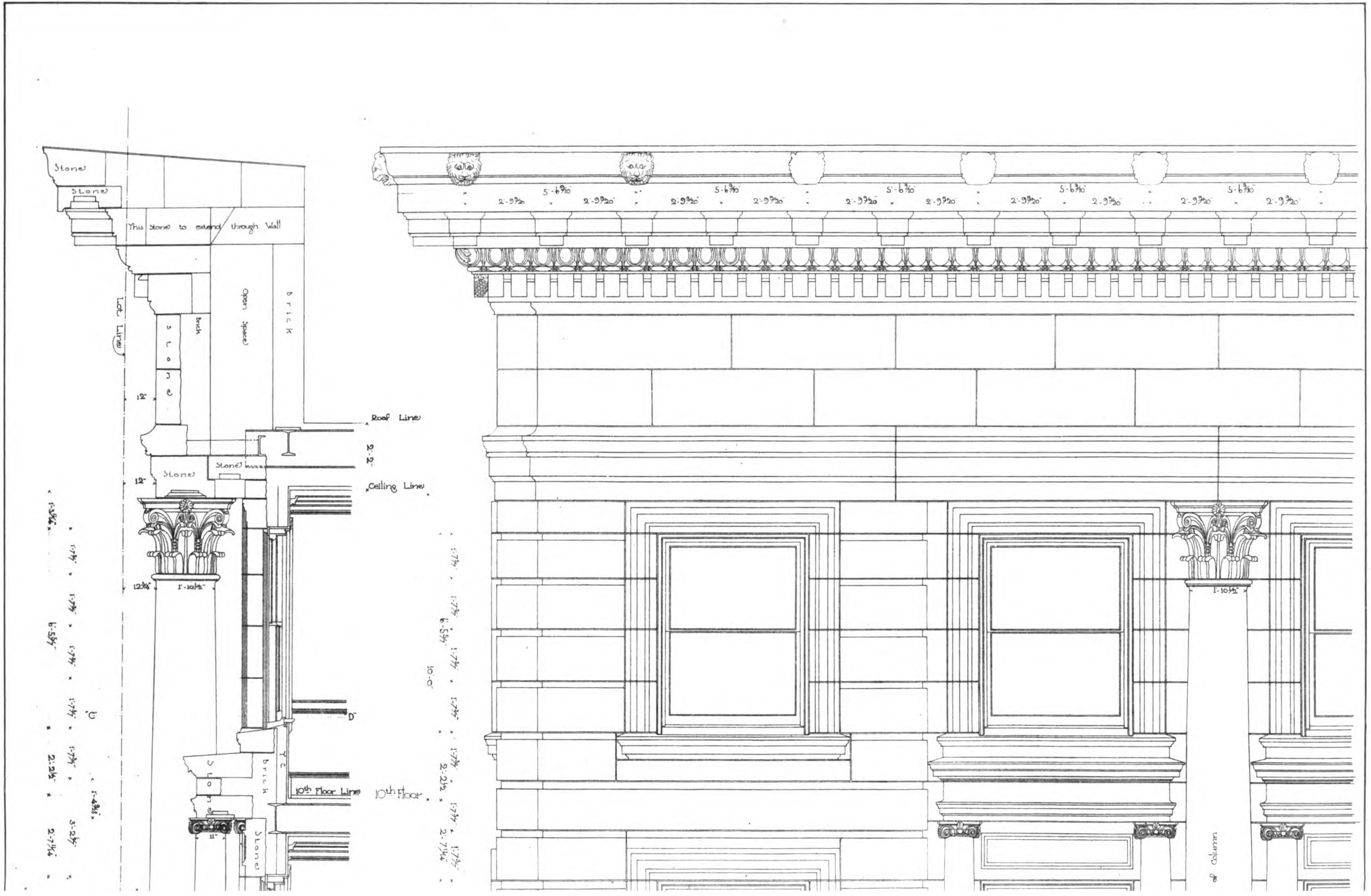

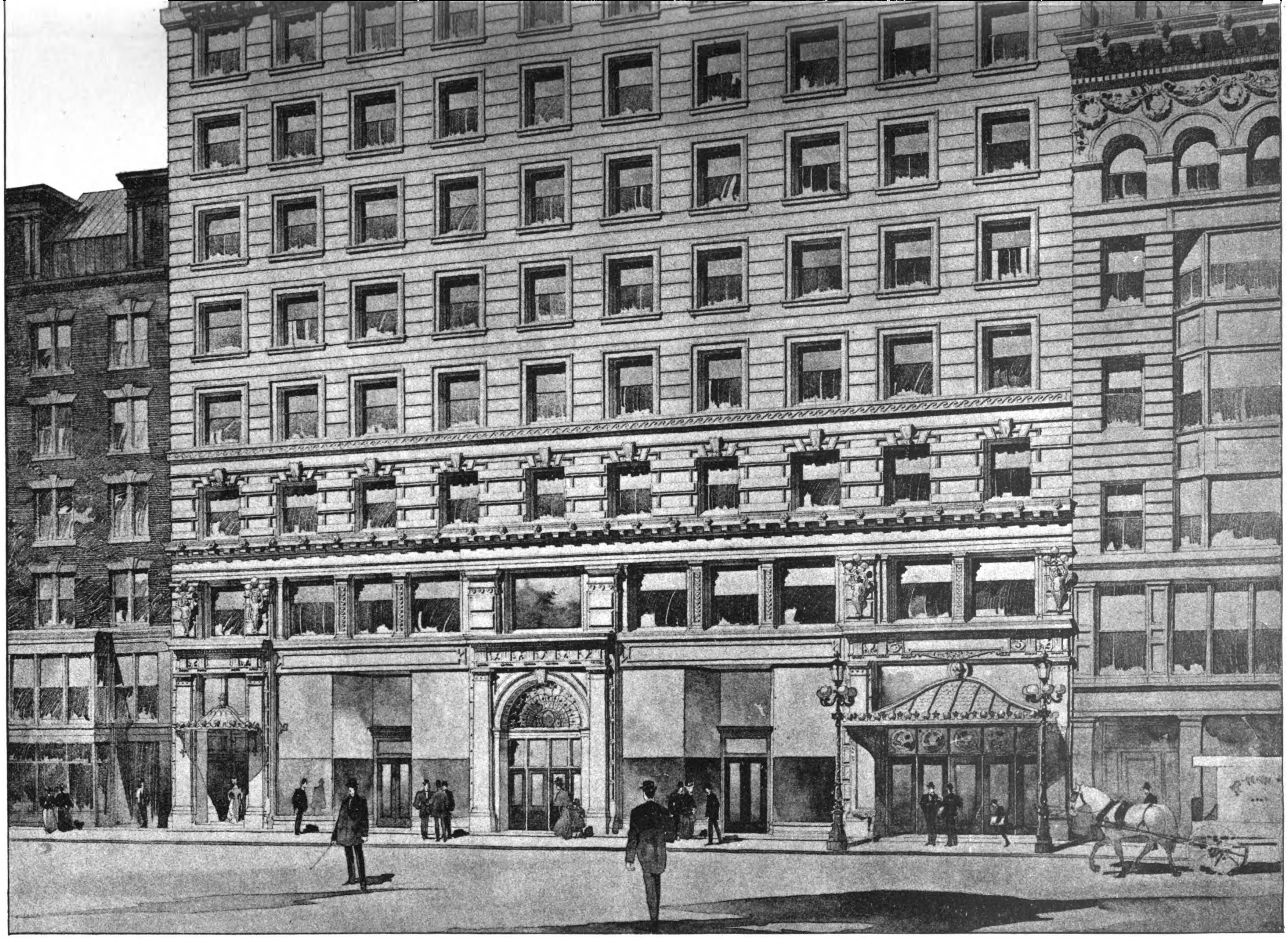

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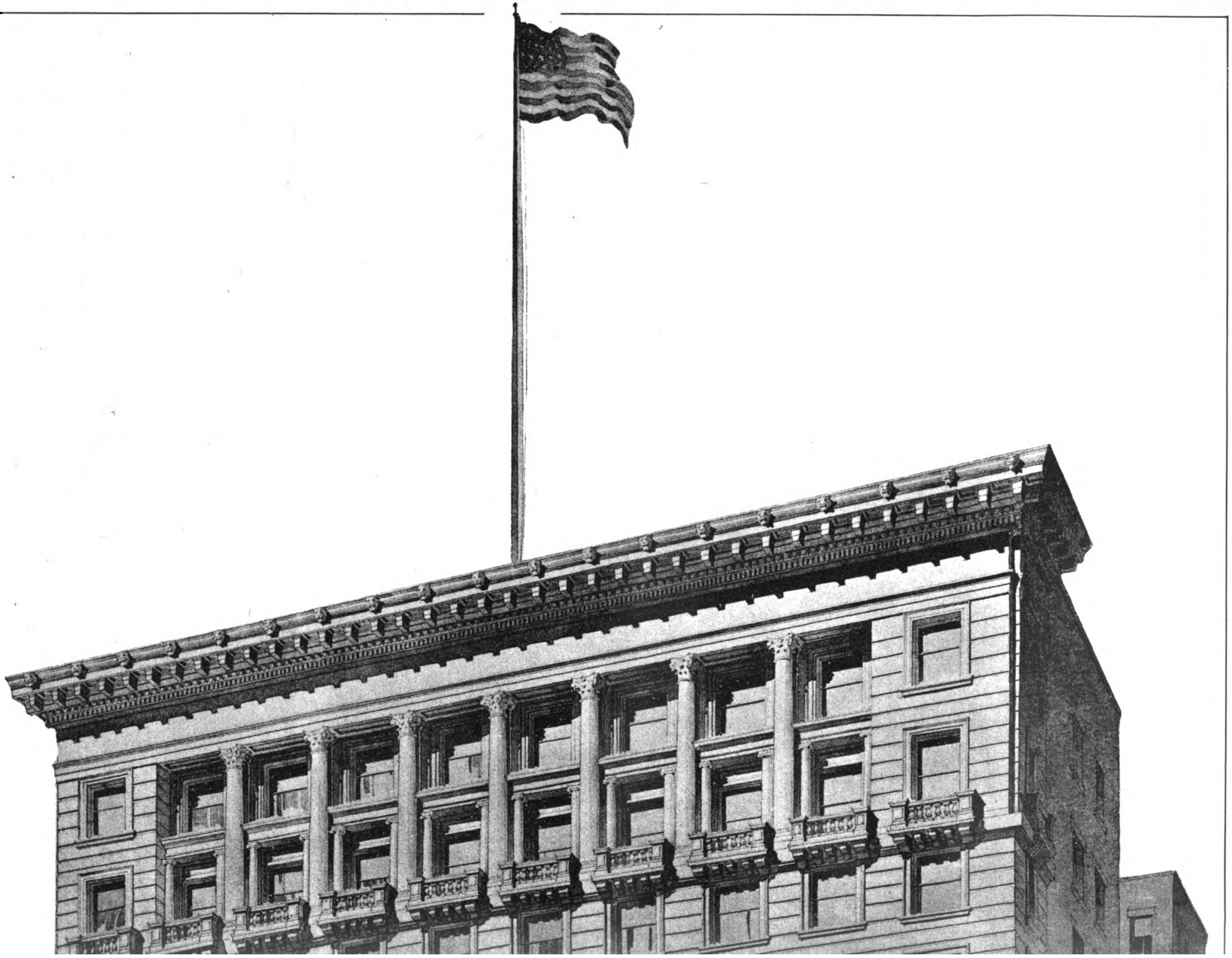
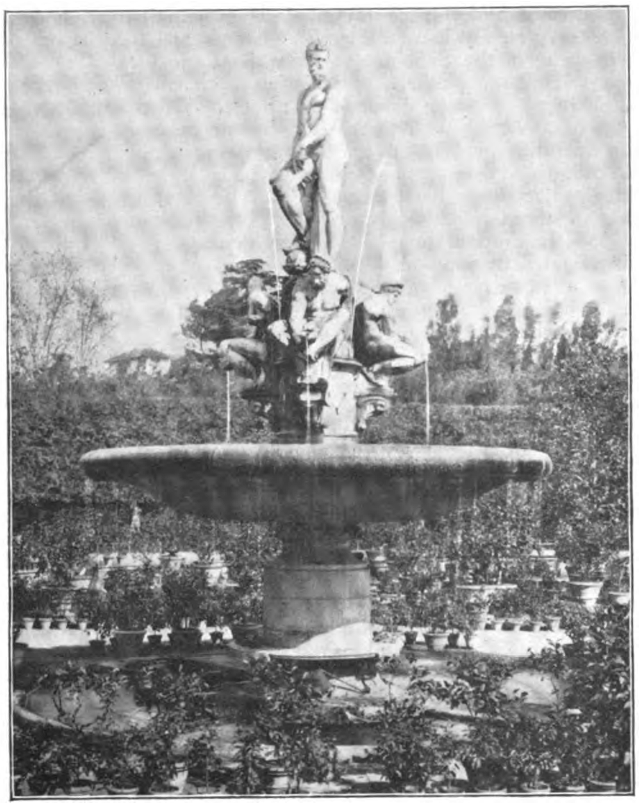


garden to-day, there is a bicycle course! Some of the older gardens had, as an important feature, the aviary, which in modern times has, in a few, developed into a more extensive menagerie.

Finally, the whole area of the garden was always walled-in, either with masonry, or with a great hedge of clipped cypress, ilex, or even box. This formal bound served at once to insure privacy and seclusion to the owner and to protect his flowers from depredation and from injury by the strong and harmful winds; moreover, it was, of course, architecturally most important in affording a frank and effective transition from the formal garden within to the wilder nature without, enhancing the effect of each by its contrast with the other. Often, at least on the side toward the prevailing wind, just outside the hedge, was a thick backing of evergreen trees showing over it, serving both as a further protection and as the completing of a still more agreeable and effective background for the whole. The breaks in this hedge, through which entrance was had to the garden, and passage had thence along the central avenue to the house itself, were often made use of as opportunities for more or less elaborate architectural gateways. Perhaps the most pretentious of these was the triumphal-arch gateway at the entrance to the grounds of the Villa Doria-Pamphily, at Rome, though such ornamental arches sometimes spanned the avenues even in the garden midst.

These, then, are the usual elements of the Italian garden, and this the general character of their arrangement in its composition. Among the special problems arising in special situations, a not uncommon one was that of making an area which was in actuality comparatively small, in effect as large as possible. For this end, two means were generally employed together. First, the paths were made long by making them wind as much as the unevenness of the surface would justify, and if this were insufficient for the purpose, further obstacles were introduced which should warrant, by requiring, greater circuitousness of approach through the garden to the house. And secondly, the greater effectiveness of this lengthening of the paths was assured by complete concealment of one part from another by dense hedges or other barriers. In this way the element of mystery or uncertainty and that of more considerable distance actually travelled were skilfully combined so as often greatly to increase the apparent magnitude of the garden. Another means of increasing the apparent size of a given area was used, though, doubtless, often unconsciously, in exhibiting a countless number of plants in pots, effective and impressive by their indefinitely great quantity. This is done in that part of the Boboli Garden immediately about the fountain of Oceanus.

An Alleyway in the Giusti Garden, Verona.



Fountain of Oceanus in the Boboli Garden, Florence.

A problem, unique so far as I know in Italian gardens, was presented to the architect of the Colonna Gardens at Rome, where the house and the main grounds were separated from one another by a highway. The villa thus "divided against itself" was skilfully brought into harmonious unity, by sinking the highway, and crossing it with suitable bridges, which, since the highway was practically invisible (at least entirely unobtrusive) from both house and grounds, served to tie the parted elements together most effectively.

One villa, the Villa Falconieri, a few miles southwest of Rome (not the Villa Falconieri at Frascati) is in style a combination of the villa of a nobleman and the residence of a wealthy farmer. The house and gardens are in the midst of a huge farm, and the farm lands come within a stone's throw of the house, but, being completely screened from it by ilex trees (*Quercus ilex*), in no way interfere with the purpose or effect of the house-garden. These are but samples to show the necessary independence of each garden of all others in scheme as well as specific treatment. JAMES STURGIS PRAY.

[To be continued.]

RECLASSIFYING THE PAINTINGS AT THE LOUVRE MUSEUM.

Incandescent Lights.

CLAUDE PHILLIPS writes, in the London *Telegraph*, February 10: —

> The fashion for collecting in some central room of a vast mixed gallery the most celebrated pictures of various schools has for some years past been on the wane in the great European museums with which it was formerly identified. At the National Gallery, the Berlin Museum, the Dresden and Munich galleries and the Hermitage it has never found favor. The Tribuna of the Uffizi has lately been compelled to give up some of its chief treasures, and these have been distributed among the surrounding *salons* in accordance with their schools. It now, in its transitional state, fulfils neither the decorative nor the scientific ideal. Only the other day, on the occasion of the Velasquez fêtes, the no less famous, and, as regards its contents, infinitely more remarkable, Sala de la Reina Isabel II, at the Prado of Madrid, which rivalled the Salon Carré itself in the beauty and celebrity of the pictures brought together on its walls, was set aside entirely for the works of the greatest of Spanish painters; Giorgione, Titian, Raphael, Rubens and Van Dyck being rather unceremoniously turned out and sent back to their own groups.

The great gallery of the Musée Condé, at Chantilly, still remains — and, unfortunately, under the provisions of the late Duc d'Aumale's will, must ever remain — in the hopelessly chaotic state of former years. Now the turn of the Louvre has come. Athough the Salon Carré itself is not yet formally attacked, it will have to deliver up, on the occasion of this methodical classification, all its Rembrandts, Rubenses, Van Dycks and Flemish pictures, and like demands will be made upon the Salle Lacaze, in which there have hitherto been preserved all the pictures, of whatsoever kind, left to the French nation by the patriotic donor of that name. When English visitors to the forthcoming exhibition seek to renew pleasant acquaintances with their old friends in this the wonderful central museum of France, they will be at first strangely puzzled. The huge Salle des États, which projects over the gardens of the Carrousel, has been divided into two large top-lighted galleries, two high vestibules and fourteen cabinets, in the style of those of Dresden and Munich, these last being lighted by windows looking upon the quay and the gardens. One of the two large galleries thus made available will contain the whole "History of Marie de Médicis," painted by Rubens and his pupils for the Luxembourg; the other will be devoted to the Flemish masters generally — to Rubens, Van Dyck, Jordaens, Gaspar de Crayer and the rest.

The great innovation will, however, be the classing of the unsurpassed collection of Rembrandts by themselves in two of the new cabinets. In this particular, the example of Berlin has been followed. Three more cabinets will be devoted to the small pictures of the Flemish school. Four more will be set aside for the French and Dutch pictures of the Salle Lacaze; the collection hitherto contained in which will thus be cut in two. Then again, the architectural divisions which exist already in the Long Gallery will be utilized so as to group certain schools strictly by themselves. One will, for instance, be accorded to the German, another to the English school. Other panels or wall-spaces will show the Raphaels, the Titians, the works of Paolo Veronese and his school, as much as possible by themselves. The two great galleries, containing respectively the French works of the seventeenth and eighteenth centuries, will remain as they are, with the important exception that the "Triumph of Alexander," by Lebrun, will be moved into the square gallery, where there has of late years been brought together, in imitation of the Uffizi, a Painters' Gallery; that is, a collection of the portraits of notable painters done by themselves or by brother artists. To this mixed but interesting group of pictures, galleries on the second floor will now be allotted.

It will be seen that these radical changes constitute practically a re-hanging, and a new classification of the vastest and, in some respects, the greatest collection of pictures in the world. Only the gallery which now shows the Italian works of the Trecento and Quattrocento will be spared. There can be little doubt that the student, the lover of great pictures who looks upon them as something beyond furniture and decoration of the higher order, will gain enormously by such a change, if only it be intelligently worked out. If the reclassification be managed with taste and discretion, there can be little doubt, too, that the decorative aspect of the Louvre's matchless galleries will be improved also. The only question open for discussion is whether it is or is not wise to keep the great masters entirely by themselves; that is to say, to reserve Rembrandt for the company of Rembrandt alone; to keep each great Venetian apart, instead of allowing him to consort, not, indeed, with all the centuries and all the schools, but, at any rate, with his fellows. It would appear that even the new Velasquez room at the Prado is not above criticism as to its general effect, while the Rembrandt room at the Berlin Museum unquestionably errs in the direction of sombreness and lack of immediate sensuous gratification to the eye.

BOOKS AND PAPERS

It is, perhaps, fortunate that we cannot mention names in connection with this collection of views,[1] as they appear without specific titles. But as they are offered to the public as a collection of views "*chosen*" by an American architect, and as we are thus bound to suppose they represent the work of the best modern French architects, as appreciated by one cis-Atlantic *confrère*, it might not be flattering to have the hearty disgust we feel, and must in a measure express, directly associated with any particular persons. It evidently did not occur to Mr. Selfridge that in allowing to be republished as selected by himself the set of photographs he had collected, he was putting on exhibition his own taste in architecture quite as much as that of the men who had created these aberrations and abominations.

It is not possible to believe that these buildings are the creations of men trained in the École des Beaux-Arts: they must rather be the result of the combined effort of the speculating *entrepreneur* and an association of *rapins* who had spent a few weeks in the *ateliers* cleaning *godets* and collecting the *calques* that showed the discarded and unused imaginings of some *élèves de seconde classe*, who found their *patrons* would not allow them to incorporate such details, formless, exaggerated and unscholarly, in the *projets* they were trying to force into some approximation to architectural form.

It is as much a matter of wonder that any one seeing such buildings should think they were worth photographing, as that any one should be willing to buy the photographs when made, and later be able to find a publisher willing to put them on the market as a series of reproductions. If the chain of folly is to be completed, we must wonder at the Americans who can find it worth their while to add to their working libraries this collection of inferior subjects reproduced in a markedly inferior way. As to the publishers' part in the matter, we can only say that it is painful to find them willing to have their excellent series of "*English Country Houses*," published last year, followed by this debasing collection of prints, got up outwardly in the same manner but not one in twenty of which should have been accepted from the printer. To be sure, it is in some sense a mitigating attribute that many of the prints are so poor that it is quite impossible to see how very much poorer the obscured details probably are than they seem to be.

When the writer, who thoroughly believes in the training that used to be furnished by the École des Beaux-Arts, was studying in Paris, it used to be the fashion for his French fellow-students to laugh at the exuberance and eclecticism displayed by the *nobles étrangers, les Americains.* But no American then dreamed of attempting such eclecticism as is shown here, nor can Milwaukee or Philadelphia show in their buildings of a decade ago more exuberance to the square foot than is shown on Plates 28, 29, 60, 65, 75, 83, 84. Here and there there are a few subjects that show their authors had some understanding of what restraint and sobriety really mean, and fairly indicate that some of the *patrons* still believe in laying stress on proportion and composition. It seems clear that the inclusion in this collection of Plates 24, 48, 49, 87, 88, and a very few besides, must have been accidental, not intentional.

If there is one thing that is more amazing than another in all this display of modern French genius, it is to discover how entirely these moderns misunderstand and misuse the beautiful French Renaissance of the Francis I period, for oddly enough there is a very apparent attempt to revive this style and apply it to street architecture. Yet of all the funny perversions of the styles, perhaps the funniest of all is shown in Plate 29, where, pendent and hanging free from the Gothic bed-mould of the cornice, are a series of claws, like the claws of a dredging-machine or a hay-hoist, which look as if they might be intended to be lowered down independently of one another until each had grappled some ornament or feature below it, so that on the application of power such decoration or feature might be at will stretched into some other form or given some different proportion. If the publication is not a joke it is surely misbegotten, and it is a great pity that it was not still-born.

The versatility of the great Flemish painter Rubens[2] is unique. He could paint anything and everything; he was a diplomatist, a genial companion, an excellent father, a devoted lover, a well-regulated worker, a good husband, an upright, moral man and faithful friend. He collected works of art and lived amongst them. He had a valuable library and could read books in several dead and living languages. He was a religious man, rising at 4 A. M. in order to begin the day with prayer by attending mass. He was the friend of the Infanta Isabella, and by her was sent to the Court of Spain on diplomatic business, and possibly Philip IV, the patron of Velasquez, was the only person who ever snubbed him. The king was astonished that his aunt, the Infanta, should "employ a painter in affairs of such importance. It might throw deserved discredit on the monarchy, for its prestige must suffer if ambassadors were forced to discuss such grave matters with a man of low rank." But Rubens, holding that "war is a chastisement from heaven, and that we ought to do our best to avoid the scourge," and to seek to obtain "that most excellent masterpiece, peace," put up with the king's haughty impertinence, and won him over as an admirer of his work. Philip had "excellent taste in painting," said Rubens; and how could it be otherwise when we know his estimation of Velasquez was so great? But Rubens was more than a painter, and he felt confidence in his own powers of winning over every one to his cause. "He thought he should be welcome anywhere." And so we find him the friend and adviser of sovereigns and statesmen in spite of his "low birth," which, by the way, is pure fiction.

The taste of the day led the painter into the most extraordinary anachronisms. As Tymandre, quoted by M. Michel, says: "What, pray, have Cupid, Hymen, Mercury, the Graces, Tritons, and Nereids to do with the history of Henry IV and Marie de' Medici? And what connection is there between the divinities of mythology, the ceremonies of the church and our customs that they should be joined and confused together, as by Rubens, in the works you have just mentioned?" Naturally this was an "abuse," but one which prevailed in all the art of the seventeenth and eighteenth centuries; and looking at these mythological absurdities, we must fain admit that, brushing the anachronisms aside, there is much which is admirable in color and design.

M. Michel refutes the modern notion that many works formerly attributed to Rubens are by Van Dyck, and he thinks modern criticism is as faulty in giving over to the younger painter so many masterpieces as the older writers were in the contrary opinion, for Van Dyck was so short a time working with his master that it would have been wellnigh impossible for him to have "assisted" in so many works.

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[1] "*Modern French Architecture.*" One hundred views chosen by Russell Selfridge, architect. Boston: Bates & Guild Company. 1899. Price, $10.

[2] *Rubens, His Life, His Work, and His Time,*" by Emile Michel; translated by Elizabeth Lee. London: Heinemann. New York: C. Scribner & Sons. £2 2s.

Rubens's criticism of London is worthy of quotation: "The island in which I now am seems to me a place well worthy the curiosity of a man of taste, not only on account of the charm of the country, the beauty of the race, the outward appearance of luxury in a wealthy people, happy in the enjoyment of peace, but also on account of the incredible number of excellent pictures, statues and antique inscriptions possessed by the court." How soon was war to take the place of peace, and all these art treasures to be dispersed!

Rubens was happy in his wedded life, and both his wives are prominent figures in many of his works. At Munich there is a charming portrait-group of himself and Isabella Brandt, who often figured as saint and the Blessed Virgin herself. His second wife, the beautiful girl of sixteen, Helena Fourmant, whom he married when forty years her senior, was painted over and over again in more questionable pictures, and it may be suggested that possibly a wife somewhat more mature might have held his hand from executing subjects which we may sometimes regret should have been signed by so refined a man as Rubens. The type of mind which could go to mass in the morning and then set to work on some of the pictures of the later period must ever remain a riddle to most of us. This glorification of the nude, his worship of color, his passion for movement, do not explain it fully, because we find his earlier work free from the coarseness of the later. In his "Kermesse" he may have wished to draw a moral, for we cannot for one moment believe he could revel in that example of drunkenness and buffoonery. But other works are not so easily explained.

One may ask here why many painters delight in landscape when life is ebbing? Rubens was not an exception. He bought a country-house, the Chateâu von Steen, and then poured forth a mass of landscapes which, says M. Michel, influenced Gainsborough and Constable not a little. Doubtless; but what painter can escape the influence of such a man? "What a magician!" said Eugène Delacroix. "I am sometimes angry with him and quarrel with his coarse forms, his lack of refinement and elegance. But how he rises above the small qualities that are the whole baggage of the others! Rubens does not correct himself, and he does well. . . . I notice that his chief quality, if it be necessary to put one before another, is his extraordinary vividness; that is to say, his extraordinary life. There is no great artist without this gift. . . . Titian and Veronese are lifeless beside him." "A just eulogy," says M. Michel, "save for the last words, which betray an excessive partiality." Surely not, for neither of the great Italians painted movement as did the Flemish painter. Think for a moment of some of the Bacchanalian pictures — "The Battle of the Amazons," "The Fall of the Damned," and those delightful little Cupids and Angels (step-brothers) who swarm in the skies of so many of the great master's works.

The summary at the end of the second volume is as masterly as it is correct, and I will conclude with a few extracts from it.

"His marvellous variety is one of his distinctive qualities. His work is a whole world, and he has touched every style. He only found rest in change of work. . . . Few men were so well endowed as he was by nature. His luminous intelligence, his strong good sense, his extraordinary imagination and memory, his vocation itself were inborn. . . . The son of an heroic mother, brought up in exile, in the hard school of poverty, he early became conscious of his responsibility, and while still young, had to depend on himself." His mother sacrificed much for him, and he returned her love by affection and diligent study of all kinds. He went to Italy and copied innumerable examples of the Italian masters. There he improved his art and acquired a cultivated taste. He explored Rome and sketched its ruins. Thus "when he returned to Antwerp, his sense of life was enlarged, his talent was formed. . . . His eye was keener, his hand was lighter, his taste purer." But he kept all the qualities of painting which were peculiar to himself. He painted mostly on a whitish ground, and was most careful in the preparation of his colors and in leaving his work to dry properly. Indeed, he sometimes made his patrons impatient when, as in the case of his pictures for Philip IV of Spain, he would not send them off for two months because they were not dry. When he conceived the subject he dashed off a sketch, and he rarely altered his first impression, preferring rather to paint another of the same subject.

"Nothing," to return to the author, "is more hateful to him than chicanery, disputes and war. . . . His dream of a golden age presupposed security and peace, the free development of the nation's active forces, then wasted in barren, murderous struggles in the direction of productive labor. His aspirations were for inward peace, a well-balanced mind, always master of itself, the power to be of use and to devote himself to worthy tasks. The story of his life proves how greatly reason, a well-regulated mind, habits of wisdom and morality, enter into the composition of such genius as his. . . . He knew himself well, and invariably worked with due regard to his aptitudes and temperament. . . . He was free alike from the exaggerated illusions and the periodical depression of less well-balanced natures. He produced with facility. . . . He saw quickly and clearly. . . . His production is the most abundant, and his field of activity the vastest to be found in the history of painting. . . . His intelligence and eager desire for knowledge enabled him to understand and express everything . . . with a firm, individual touch. . . . He always relied on Nature and was capable of extreme simplicity."

"One of the last representatives of great art vanished with Rubens. When he died in the fulness of his glory, the greater number of his friends had gone before him, or were soon to follow him, to the grave. . . . In our own time Fromentin, in the exquisite pages he devotes to the master, has, in his turn, helped us to understand Rubens by describing in eloquent words of admiration some of the great works that his country has preserved. . . . As for us, . . . we shall be satisfied if we have given some idea of so vast a genius, so alert an intelligence, so well filled and regular a life, a life that does honor to the human race by the gifts with which it was endowed, and the use it made of them."

M. Michel's two volumes are exquisitely illustrated with forty colored plates, forty photogravures, and nearly three hundred illustrations in the text. The English translation is fairly well done, though it of course loses the particular charm of the original, and the translator seems to have no fixed idea as to the language in which her proper names should appear. "Lewis XIII and Marie de Medici," is a curious combination of three languages; and there are many such in the book. After M. Michel's panegyric it may be entertaining to give Horace Walpole's estimation of the great master: "His scholar Vandyke contracted a much genteeler Taste in his Portraits;" and "what serv'd other Painters for models of beauty, was to him a Standard of miscarrying."

THE ILLUSTRATIONS

[*Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.*]

BUILDING FOR THE F. L. AMES ESTATE, BOYLSTON STREET, BOSTON, MASS. MR. C. H. BLACKALL, ARCHITECT.

THIS structure is to occupy the site of the old Public Library. The exterior is to be constructed entirely of Milford pink granite, the stone all being finished with a fine hammered surface. The columns extending through the two upper stories are in full relief, and are structural in the sense that they support themselves and the cornice independently of the steel framework. The building is to be constructed on the steel-skeleton plan, using altogether nearly three thousand five hundred tons of steel. The main portion of the building will be occupied by offices, but in the rear, covering nearly half of the total ground-area of 21,000 square feet, and extending through sub-basement, basement, first, second, third and fourth stories, there is to be a theatre with a seating-capacity of a little over one thousand five hundred. In the upper six stories the office portion of the building is to be carried back over the theatre auditorium, being carried by girders spanning 84 feet, and weighing 160,000 pounds. The main entrance to theatre will be from Boylston Street, from the right on the front, with a second entrance to the gallery on the extreme left. The name selected for this playhouse, which is to be leased by Rich, Harris & Frohman, is the "Colonial Theatre."

DETAILS OF THE SAME: TWO PLATES.

[The following named illustration may be found by reference to our advertising pages.]

THE NEW YORK "BOX-STOOP," — X: NO. 4 EAST 78TH ST., NEW YORK, N. Y.

[Additional Illustrations in the International Edition.]

THE PORCH: HOUSE OF ADDISON CAMMACK, ESQ., TUXEDO PARK, N. Y. MR. BRUCE PRICE, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print.]

DINING-ROOM CHIMNEYPIECE IN THE SAME HOUSE.

[Gelatine Print.]

ROOD-LOFT AND CHOIR: CHURCH OF STE. CECILE, ALBI, FRANCE.

A RECENT issue of the *Churchman* closes an interesting account of the great cathedral church at Albi with these words: — "It might have been thought that after raising Notre Dame du Puy and Notre Dame de Paris the resources of French architectural genius had been exhausted, but such a supposition is contradicted by the existence of the church at Albi — perhaps in many ways the most amazing ecclesiastical structure in all France."

Amazing is just the right word, for if the exterior of this great brick structure is impressive, its interior, with its intricate decorative treatment, is surely amazing, and of the character of this treatment these two plates from Baron Taylor's "*Voyages pittoresques en France*" give an even better idea than the photographic view we published January 18, 1890.

THE CHOIR: CHURCH OF STE. CECILE, ALBI, FRANCE.

PROPOSED PUBLIC LIBRARY, DUMFRIES, SCOTLAND. MR. F. G. GRIERSON, ARCHITECT.

COMMUNICATIONS

[*The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.*]

THE PRESENT YEAR IN ROMAN NUMERALS.

Milwaukee, Wis., March 7, 1900.

To the Editors of the American Architect: —

Dear Sirs, — Could you inform me as to the correct manner of writing 1900 in Roman numerals? Is it MCM or MDCCCC?

Yours truly, Remus.

[The system of Roman notation is comparatively simple and may be stated thus: If the symbol of a smaller quantity is written before that of a larger one the quantity so expressed is the difference between the larger and the smaller quantities. But if the symbol of the smaller quantity follows that of the larger, the quantity expressed is the sum of the two quantities. The clock-dial affords the commonest example of the rule, where IX, which means really X – I, is known to stand for 9 o'clock, while XI (X + I) stands equally for 11 o'clock. Seemingly, then, the year 1900 might be written as MCM, that is, 1000 + 900, or as MDCCCC. We believe, however, that the first form is the more scholarly, and that the later is sanctioned by the analogy of the 4 o'clock symbol on the dial, which in place of reading IV, as it should, actually reads IIII, because of a royal whim, as every one knows. — Eds. American Architect.]

NOTES AND CLIPPINGS

Remarkable Uses of Peat. — One of the most interesting and attractive exhibits at the Vienna Exposition of last year was a building containing the most diverse articles made from peat. Everything in the building, from the carpets on the floor to the curtains at the windows and the paper on the wall, had been made from peat. These were but representatives of what will undoubtedly soon become a great industry and give to the peat-bogs of the world a value never before dreamed of. Credit for the discovery of the possibilities of peat belongs chiefly to a Vienna gentleman, Herr Karl A. Zschörner. His investigations into its nature began some twelve years ago with a study by means of the microscope of what is called in Austria "torfstreu." This is the layer of moss which covers the surface of most peat-bogs. It has hitherto, by those who have made use of the peat for fuel, been, at considerable expense, removed and thrown away. Herr Zschörner's examination showed that the plant-remains which make up this layer abound in hollow spiral cells. These absorb water and other fluids with great avidity. While ordinary straw cannot absorb over four times its weight of fluids, this peat-straw will absorb ten times its weight. The peat-straw, moreover, possesses the antiseptic and disinfectant qualities of peat, qualities which have long been known, but of which little use has been made. Herr Zschörner accordingly hit upon the idea of drying the straw and using it as an absorbent in stables, breweries and various manufactories. For such purposes it proved most admirably adapted, and the demand for the product soon grew large. Having greater absorptive power than ordinary straw, the peat-straw can be used much longer in any given place and yet will have proportionally greater manurial value. It gives a healthy, resilient footing also for animals. For packing of both perishable and breakable articles it is also better than ordinary straw, since it is more elastic and less easily penetrated by heat and cold. Another form of peat which was found to be a better absorbent for some places was the peat itself, dried and ground to a powder. This is especially adapted for use in earth-closets and about sinks and drains, its absorbent power and disinfectant properties making it admirably adapted for these uses. — *Journal of the Franklin Institute.*

Search for Water with Divining-rod. — The use of the so-called divining-rod for the discovery of hidden springs or underground water-courses is about to be scientifically investigated. A commission has been appointed in France to study all apparatus and methods employed by sorcerers, "water-seers," wizards, and all specialists in occultism, in the discovery of water in other ways than by those recognized in geology and hydroscopy, such as the divining-rod, exploring pendulums, hydroscopic compasses, magnetic and electric apparatus, etc. The president of the commission is M. Brothier de Rollière, a French engineer. Says *Cosmos:* "To get at the truth, M. de Rollière will procure, seek and collect, all devices, works, reviews, journals, experiments, reports, and observations for and against the divining-rod and other like apparatus, with names and addresses of the authors or inventors; he will put himself in communication with all persons who have experimented or written on the subject, with a view to holding a meeting of them, and clearing up, if possible, these cloudy questions that ought to be treated in public. He wishes, therefore, to collect the largest possible number of addresses of sorcerers and wizards. . . . It is said that these exist everywhere, in all parts of France and of Europe; but when they are sought they cannot be found. It would, nevertheless, be very interesting to know them; for if their science is exact, they will, of course, find lucrative employment and will render valuable service. If their knowledge is worthless, it will be so proved, and people need no longer employ them. M. de Rollière, therefore, makes an appeal to all persons, in France and elsewhere, to furnish him with the necessary documents in great numbers. We take great pleasure in making known a request which will interest all students of science, both theoretical and applied." All facts or documents for M. de Rollière may be sent to the office of *Cosmos*, 8 Rue François Premier, Paris. It may be doubted whether scientific hydroscopy will gain much from this inquiry, but it ought to bring out a rich collection of facts for students of folk-lore, the psychology of superstition, etc." — *Translation made for the Literary Digest.*

Anchor-ice and Electricity. — A novel use has been found for an electrical stove by the Water Board of Marquette, Mich. The stove has been put in the intake-pipe which supplies the water to the city works from Lake Superior, and its purpose is to keep anchor or needle ice from forming on the sides of the pipe and finally stopping the flow. The stove is the invention of the superintendent of the local electrical plant. It is a resistance-coil like those used for heating street-cars, and is made in circular form to fit within the intake-pipe, the water passing through it. Current is furnished to the stove at slightly above one hundred volts, and the plan is to keep it in constant operation when weather conditions are favorable for the formation of needle-ice. It is not necessary that any great quantity of heat should be generated, a rise of two or three degrees being sufficient to melt the ice as fast as it forms. The cost of the apparatus is $25, and this expenditure will save at least $100,000 for a new and deeper intake. — *N. Y. Evening Post.*

An Old Palace at Auction. — The magnificent palace of the old Flemish Dukes of Arenberg, in Brussels, one of the great sights of Belgium, is to be sold by auction. It was built in 1548, and was formerly the residence of Count Egmont. The present Prince of Arenberg has resolved to give up his Belgian nationality and settle in Germany, and he will take the famous Arenberg gallery of paintings to his new home. It is said that the Belgian government and the Common Council of Brussels have agreed to buy the historic old palace at any cost, to prevent it from falling into private hands, and to utilize it as the future home of several learned and scientific societies under the title of the "Palais des Savants." — *Westminster Gazette.*

Exhaust Steam-power of Engines further utilized. — What amounts to a revolution in mechanical economics is reported to the State Department by Consul-General Mason at Berlin. Professor Josse, of the Royal Technical High School at Charlottenburg, has succeeded in advancing the efficiency of the modern compound steam-engine 50 per cent by the absorption of heat from the exhaust steam through sulphurous acid, which, being evaporated, drives an auxiliary engine.

To save the Big Trees. — At the opening of the Senate's session, March 6, Mr. Hansbrough, of North Dakota, reported the House joint resolution directing the Secretary of the Interior to place under bond the "Mammoth Tree Grove" and the "South Park Grove of Big Trees" in Calaveras and Tuolumne Counties, California. The idea is that the Government should acquire the groves. The resolution was adopted.

The Function of Paris Streets. — An article in the March number of the *Century*, "Paris of the Faubourgs," by Richard Whiteing, author, and André Castaigne, illustrator, throws a bright light on the difference between the lives of the laboring classes in the French capital and in London. The Parisian lives in the streets, and prides himself on their beauty and cleanliness; the Londoner has less to boast of in this respect, and takes less interest in the external aspect of his city. The people of the faubourgs, the humble folk generally — small traders and small annuitants, as well as workmen — like all the rest of us, are the product of their surroundings. They are shaped by the private life and by the public life, by the street, and the home. These people in Paris owe a great deal to the public life. It condescends to their needs for color, variety, movement, in a way universal among the Latin nations. Out-of-doors is merely their larger home, and they expect to find adequate provision there for every kind of enjoyment. Our own race tends to regard that domain as a mere thoroughfare between the workshop and the fireside, where all our interests are centered. If it serves that purpose that is about all we ask of it. It may be as ugly as it likes, and, within certain limits of indulgence, almost as dirty. To the Frenchman it is more than a place of transit; it is almost a place of sojourn. So the Parisian common man has his share of the Champs Elyséės and of the boulevards in his freedom of access to their fountains and promenades, and their bordering alleys of tender green. He comes downstairs to them, so to speak, as soon as the scavengers have done their timely work. He descends to his thoroughfare as the millionaire expects to descend to his breakfast-room or his study, with all its appointments fresh from the broom, and shining in their brightness of metal and glass. So, whatever the gloom of the domestic prospect, his street helps him to feel good. The beauty of the statuary, of the public buildings, is a means to the same end. For nothing the poorest of poor devils may see the glorious bronzes in the terrace-garden of the Tuileries, the outdoor figures of the Luxembourg, the great horses of the Place de la Concorde, the magnificent compositions of the arch. The very lamp-post that will light his way at nightfall serves the purpose of a thing of beauty all through the day. Compare it with the English bar of cast-iron, hideous to the eye in form and color, foul with the mudstains of years of traffic. The Frenchmen must have it suave and shapely in its lines, a model of a good Renaissance ornament in its decorations, bronze in its material, and washed and polished every week or so to keep it smart.

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THAT the creature that fouls its own nest is laying up much trouble for itself is one of the laws of nature that is most rarely broken, and yet this simple law is one that man, the best-endowed creature of them all, has found it very hard to learn, or at least most difficult to apply with a daily persistency. Historians and archæologists vaguely wonder why it is that great and prosperous races of men have passed from the earth instead of continuing to people it and maunder over half-truths, finally settling it all by propounding the theory of the survival of the fittest. But the real cause of these disappearances is in very many cases that these former tribes and races of men didn't know how to keep their nests clean, didn't know how to police their camps and could not comprehend that systems of drainage would not work forever automatically. In a few months the Fourth Estate will be very busy rehearsing the marvels of the nineteenth century and ascribing to this field or that of human endeavor the meed of greatest progress. The wonders of electrical science will, doubtless, dazzle and mislead many men into thinking that here lies the particular glory of the century, and that Bell, Roentgen, Marconi, Edison are the names that should head the list of benefactors of the human race. But great as their claims are, we feel that the names of Chadwick, Richardson, Waring, and their coequals amongst German and French sanitarians, have a nobler claim to the top of the list. In its simplicity, their teaching, well reasoned and based on profound study, has been simply how we may keep our nests clean. But in the train of cleanliness in the home, personal and civic, follows the physical regeneration of the inhabitant which provides a sounder foundation for the intellectual effort from which all the other vast changes the century has witnessed have proceeded. Little by little the death-rate in civilized communities has lowered, the span of man's life has lengthened, and his years have been more vigorous and productive of good than ever before, and all because he has at length learned the need of keeping his nest clean, and, in a measurable degree, how to do it.

CHICAGO, after befouling her surroundings for many years, has taken the lesson of the century to heart and is trying to get clean even if she has to carry pestilence to her near and distant neighbors, and her great drainage canal will be cited as one of the wonderful engineering feats of the century. But great and interesting as this drainage scheme is, and successful and innocuous as we hope it will be, there are other large undertakings in the direction of cleanliness which have been carrying on at the same time which are, as feats of sanitary engineering, greater, while relatively as useful. We have been so much occupied by our own affairs and so used to look with disdain on the Spanish-American inhabitants of this continent that we do not all realize what a new birth Mexico has experienced under the firm and enlightened rule of Porfirio Diaz, many times reëlected President of our sister republic. While Chicago has been digging her great ditch — which there is now an effort making to convert into a great inland waterway, navigable by craft of large size — the City of Mexico has also been constructing a great drainage canal, which was to be formally opened last week, and the work of Sir Weetman Pearson is expected to do for the hill-bound and marshy city what all the efforts of Spanish and Mexican engineers for hundreds of years have not been able to do, and the inhabitants hope to see the death-rate, which was forty-four to the thousand last year, fall rapidly as the new system begins to exercise its cleansing functions. To drain Mexico was a greater task than to drain Chicago. So, too, we believe, is the draining of New Orleans a greater task, and in that city the new system of drainage canals is about one-third completed, and the several finished sections in successful operation. Here all the sewage and surface drainage has to be got rid of by pumping, and the new turbine-pumps already at work are monsters of their kind. The city is always below the level of the surrounding waterways, which are held in check by levees, as every one knows; but it can be hardly as well realized that even the waters of the Gulf of Mexico are higher than the mean level of the twenty-five thousand acres of the city, while the waters of Lake Pontchartrain are four feet above city datum, and the Mississippi River in flood flows eighteen feet above the level on the city side of the levee.

IT seems as if the building interests were never to see the end of the long line of sinister obstacles that stand in the way of a healthy revival of business. The increase in the cost of materials has put a stop to many undertakings, and the labor troubles, which have brought work in Chicago to a complete standstill, are interfering with work in other places by reason of strikes, lockouts and disputes, the most serious of which is the trouble between the New England granite-workers and their employers. In addition to these troubles, which are more or less always with us, and so can be in a manner discounted, New York operations are seriously affected by the threatened tax upon mortgages, which, taken with the increase in the tax-rate which must be the inevitable result of municipal extravagance under Tammany rule, promises to cripple building operations in the metropolis in a way which will be widely felt. On the other hand, it is rumored that the American Brick Trust is falling to pieces, and that others of these attempted monopolies are not as firmly cohesive as their promotors hoped to make them. It is not possible, either, to believe that our legislators in Washington can be quite so cynical, so entirely bound up in the interests of "party," as to look with indifference on the astounding revelations of the plea of Frick against Carnegie, and the equally astounding and significant fact that the quarterly Standard Oil dividend, just declared, amounted to about twenty millions of dollars! Just at present Carnegie is emulating Passmore Edwards, and builds innocent libraries, and Rockefeller sturdily supports Chicago University and sundry Baptist enterprises. But the holders of such great wealth, unfairly gotten, may not always use it for such innocent, even useful, purposes. If Carnegie would pay his men a living wage, and Rockefeller stop "crushing" his competitors, we could feel that the times looked less doubtful for the republic and for American institutions.

IT is not often that a great, obviously-needed and useful public improvement is taken up and acted on affirmatively with as little delay, foolish friction and political manœuvring as has been the suggestion that pipe-galleries be constructed as adjuncts to the new Rapid-transit Tunnels in New York. It does not much matter that the contractor for the tunnel work, who is by some supposed to have affiliations with Tammany, is very desirous that these pipe-galleries should be built, not only because the carrying out of the work would be an agreeable extra to his original contract, but because it will also simplify his work on the main tunnel, through in a measure minimizing his difficulties in shifting the existing street-mains and reducing the cost of so doing. The one real and important consideration is to have proper pipe-galleries built, no matter at what present cost and less matter to whose private advantage. It is more than three years since we looked out of our windows, shattered by the "Subway explosion," saw beams falling from the sky, street-cars with their passengers enveloped in flames, and heard the appalling crash of tons of falling broken glass, yet it was only last week that the test "Subway-explosion case" was called for hearing in the Massachusetts Supreme Court, and so afforded public evidence that the many claims for damage, suffering and death are yet unsatisfied. It is so obvious that that explosion could not have occurred if this city had been provided with pipe-galleries or tunnels where leakages could quickly have been located and easily repaired, that we count it as a certainty that when Boston's subway system is enlarged and extended — a matter much discussed just now, and by many believed to be fully determined on — one of the first things the engineers will provide for is a subsidiary pipe-gallery.

WHEN lawyers begin seriously to protest against the multiplicity of laws, the contradictoriness and obscurity of which are commonly supposed to afford the chief occupation of their time, and the main source of their incomes, it seems as if something might be done to check the flood that annually issues from the legislative chambers of so many States. Perhaps even architects will find it worth their while to abandon their demands for ever new "codes" of building laws. When so important a body as the Bar Association of New York City instructs one of its committees to do all in its power to put an end to the Statutory Commission and its labors, and defeat its efforts, it would seem that there must be serious ground for complaint, and this serious ground appears to lie in the fact that an endeavor is being made to engraft upon the body of the law not less than eleven new codes! It is really delightful to find these masters of gibes and jeers, who, from judge to sheerest pettifogger, always seem in building cases to try to convince all listeners that there are no persons quite so inanely idiotic as architects, falling foul of their own kind and declaring that this Statutory Commission, after twelve years' labor, have brought the codified laws under which they must practise into a state of unendurable chaos.

APROPOS of lawyers, it is also delightful to find that even they have the weaknesses of human vanity, and are as willing to exhibit it on the bench as off of it, quite as if they were common folk, and inform the world how stupendously onerous their task is and how much more grievous it is than that borne by other men. Mr. Justice Collins, of the New Jersey Court of Errors and of Appeals, lately said: "In no other profession is the reason for what is done written down for the benefit of the present generation and the guidance of posterity as in our profession. The judge must give a reason for what he does. The doctor attends his patient, he diagnoses the case and treats it, the patient may live or he may die, but no explanation is forthcoming. The pastor preaches his sermon: what he says is very rarely preserved and never read. The merchant and business-man's efforts are only shown in his success or failure. According to our system, every judge must set forth in writing his decisions and his authorities for them." Just what Mr. Justice Collins might have said about the inconsequence of the labor of the architect we cannot guess, but it seems to us clear that the learned expounder of the law wishes he had been born a woman so that he might have escaped the need of giving a reason.

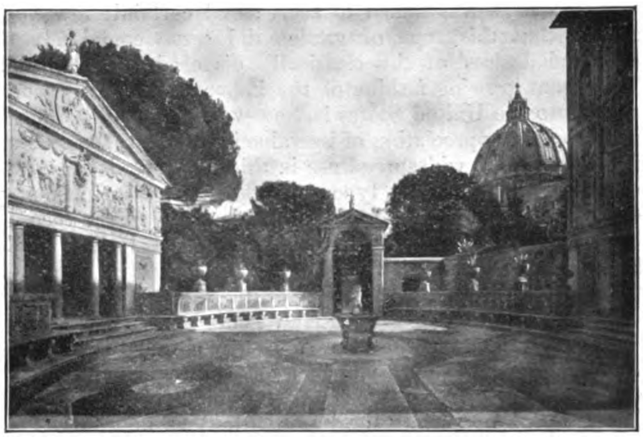
EVERY one who has used wire nails knows that, convenient as they are in many respects, they are very inferior in some ways to the old-fashioned cut nails. The lathers, if we are not mistaken, were the first to discover that the heads of the wire lathing-nails, if held in the mouth, after the manner of lathers, cut their lips; and we have known lathers refuse to use the wire nails on this account. Again, thorough tests have shown that the holding-power of a wire nail is, as a rule, only about one-half that of a cut nail; and the experience of the past few years shows that wire nails, for outside work are far less durable than cut nails. In the West, particularly, where cut nails last, for shingle roofs, almost indefinitely, the wire nails rust off, it is said, in about ten years. On the Eastern coast, a shingle roof generally becomes "nail-sick," even with cut nails, in ten or twelve years, and various attempts have been made to protect wire shingle-nails so as to keep them from rapid corrosion. These have been tolerably successful, but do not seem to have come into extended use. The wire-nail manufacturers, to meet the difficulty, have brought out a galvanized nail, which should be lasting, but its expense, probably, stands in the way of its general adoption, and it is said that the demand for the old-fashioned cut nails is becoming pressing enough to cause a marked revival of activity in the cut-nail factories.

IT is almost unfair that there should be this revival in the cut-nail industry, since, if the statements of a Pittsburgh correspondent of the *Metal Worker* are trustworthy, it was largely through their own foolishly unfair dealing that the cut-nail makers originally lost their trade to the wire-nail mills. The fact that they would not improve their machines may have been a mere mistake in business policy, but what helped to wreck their business was their folly in persisting to market as good nails all the metal that passed through their nailing machines. The consequence was that consumers, who had had to pay annually at the rate for perfect nails for something like twenty thousand tons of chips, broken bits, headless shanks and shankless heads, transferred their custom to the wire-nail men, and all the more readily seeing that, of the same denomination, there are more wire nails than cut nails in the pound. Curiously enough, it is said that the cut-nail machine is not only more complex than the machine used in making wire nails, but that an operator requires about three years' drilling before he becomes an expert nail maker, while the same degree of ability can be acquired with the wire-nail machine in about as many weeks. With this fact so heavily in the favor of the wire-nail makers, we may expect to see them make serious attempts to hold their business by changing the shape of heads to suit the lathers, for instance, and devising a process which shall absolutely remove all trace of acid from the finished nail. But even then they can hardly hope to make the wire-nail more lasting than the cut-steel nail, which has only about half the life of a cut-iron nail, while, unless some method of roughening the shank be adopted, it will still have only about half the adhesive power of the cut nail.

THE burning of the Théâtre Français, in Paris, removes a building of historical rather than artistic importance. Fortunately only one life was lost in the conflagration, and the community is on the whole to be congratulated that an old wood-built theatre should have been destroyed under such favorable circumstances. In all probability the building will be replaced immediately by another worthy of the renown of the Comédie Française, as a model for the whole world for perfect acting and classic dramas. Whether the present location will be retained for the new building remains to be seen. The lot, which adjoins the Palais Royal and stands at the junction of the Avenue de l'Opéra and the Rue de Rivoli, is perhaps the most valuable in all Paris for business, and the money for which it could be sold would go far toward paying the cost of a new and magnificent structure on another site equally suitable for the purposes of a theatre.

THE Santa Fé *New Mexican* gives an account, so sober and reasonable that it invites belief, of the discovery of some remarkable ruins in San Juan County. These appear to be the remains of a huge apartment-house, as we might call the communal dwellings of the Pueblo tribes, seven stories high, and built with stone, roughly dressed, and laid in a mortar consisting mostly of clay. The timbering of the floors is still in many places intact, and shows a construction of heavy logs of red spruce, covered with smaller ones, laid at right angles to them, and these again covered with small wood and bark, finishing with a layer of clay. The clay-mortar, which, where protected from the weather, is now very hard, seems to have been spread with the hands, for the impressions of fingers and palms are very numerous. These ought to be of much interest to the ethnologist, but, in addition, great quantities of pottery have been found in the ruins. The report says that some of the rooms have fireplaces, with plastered flues extending upward through the several stories. If this is correct, the builders must have attained a high degree of civilization. All the rooms, of which the building must have contained about seven hundred, were entered from an interior court. The remains of a second building, very similar, but more ruined, are visible near by, and an artificial reservoir, which is still in use, is not far off, and appears to have been constructed by the inhabitants of these curious buildings.

THE ITALIAN GARDEN.[1]—IV.

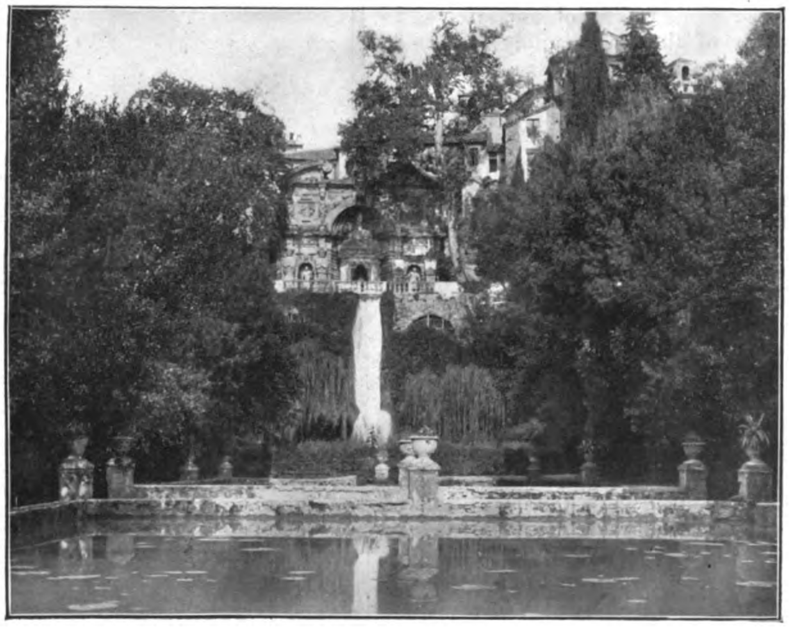


Casino of Pius IV, Vatican Garden, Rome.

WITH this general view of the Italian garden now in mind, let us look for a moment at some of the little we can trace of the history of its development in Renaissance times. Of the time previous to the High Renaissance little that is satisfactory has been made out, by reason of the destructive agencies already mentioned, and particularly the destruction of nearly everything in the neighborhood of Florence (where the early Renaissance villa reached its highest development) at the time of the siege of 1529. With the High Renaissance, the architectural treatment of the garden in its relation to the house began to come in, and may be said to have been inaugurated in the sixteenth century by Bramante in the great garden court of the Vatican, which gave a considerable impulse to this new manner. The features here originally prominent (nearly obliterated since), the terraces with balustrades crowning the terrace-walls, in which were niches and grottos, figured still more prominently in the garden of Raphael's Villa Madama; and from these two great gardens, perhaps it may not unfairly be said, the Italian garden, as we know it, in its fully-developed form, largely sprang. In them one finds the water-works introduced in a small way, trees are used more consciously for effect, the grounds become a part of the whole architectural composition, which includes the house, and all sorts of means are employed to connect architecturally different parts of the garden.

With this architectural development of the garden came the separation from its design of the flower-garden as well as the vegetable or kitchen garden, both of which were now often given distinct enclosures. This division seems to have corresponded to that spoken of in descriptions of the more developed of the old Roman gardens, between the park and out-buildings on the one hand, and the casino[2] and its ornamental garden on the other.

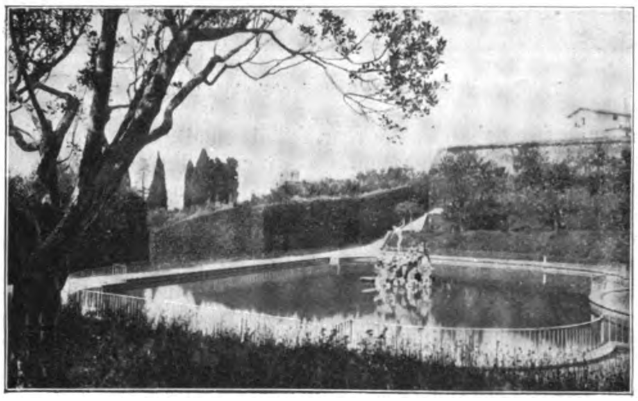
But it was not until barroque times that the Italian garden reached its fullest and highest development, and the influence of this decadent style is of course to be noted in its examples.[3] Thus in some of the grottos, made in imitation of natural ones, stalactites are carved on the roof, and green paste is employed not only to stimulate the growth of mold, but to simulate the mold itself! Still, on the whole, it is notable how little the unfortunate license and sham of the period worked its way into the gardens. Indeed some of these works of barroque date are as beautiful, quiet, and in harmony with their surroundings as can easily be imagined. When labyrinths, solitudes, *chinoiseries*, huts of straw, ruins, Gothic chapels, etc., occur, they are always to be regarded as comparatively modern imitations of foreign fashions. In barroque and later times the influence of the formalists was also operative in the gardens, and led to some especially prim designs.



Cascade, Water-organ and Basin: Villa d'Este, Tivoli.

Though the special character of every garden varied so with the particular preëxisting natural conditions of the location, the type remained much the same all over Italy. In the southern part, there is very little of interest in the line of gardens now to be found. Although one finds, according to Mr. Platt, here and there bits of interest in themselves, there remains nothing sufficiently complete to bear the character of a design. About Naples, there was in general no great abundance of water available for garden purposes, but the magnificent views out over its famously beautiful bay went far to make good the lacks consequent on this scarcity.

Immediately about Florence there is almost nothing extant dating back of 1529, the time of the city's siege already referred to, when there occurred a great voluntary destruction of villas. Of those which are now to be seen, none is more generally familiar, by photographs and published descriptions as well as from first-hand knowledge, than the Boboli, though there may be others more beautiful. Outside of Florence, a few are still to be seen more or less well-preserved.



Boboli Garden, Florence: Basin of Neptune: Stoldo Lorenzi.

It is in Rome and its neighborhood, however, that are to be found most of the noblest of Italian gardens, where they have been built largely by different members of the great papal families. At and near Frascati, southeast of Rome, are the three interesting gardens of the villas Aldobrandini, Conti, and Falconieri. Two very great gardens deserve special mention, that of the Villa Lante,[4] at Bagnaia, near Viterbo, forty-one miles northwest from Rome, and that of the Villa d'Este,[5] at Tivoli, eighteen miles northeast of that city. The former is remarkable as being, all things considered, the most completely preserved to-day of all Italian gardens, and the latter, when in its prime, was doubtless the finest in all Italy. In Venice, from the nature of its site, the few gardens which exist are very small. Some beautiful examples, however, of these small gardens are to be seen to-day connected with private residences on the island of Giudecca.

Finally, a word must be said of the gardens in and about

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[1] Continued from No. 1264, page 85.

[2] See *American Architect* for Sept. 18, 1897.

[3] See *American Architect* for April 3, 1897.

[4] See *American Architect* for December 25, 1897.

[5] See *American Architect* for August 22, 1896.

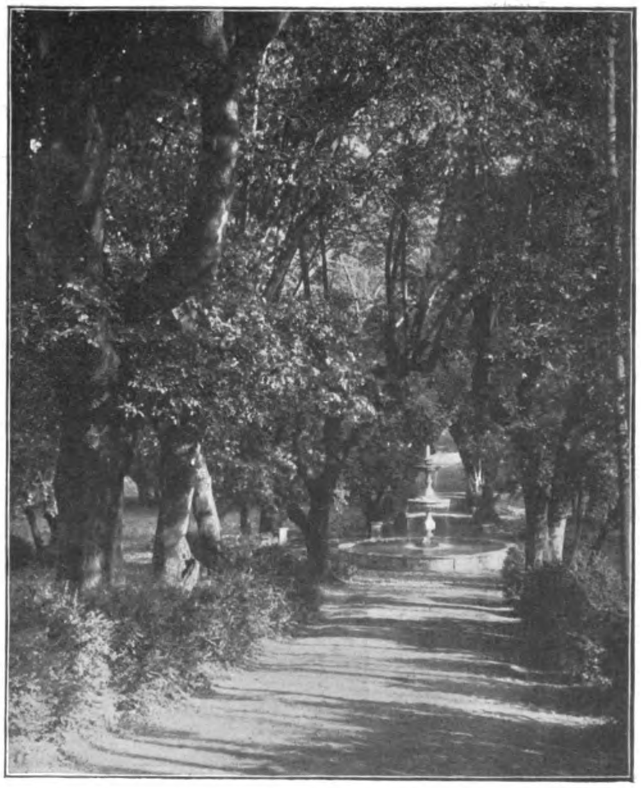
Genoa. Genoa, La Superba, one of the most splendidly situated cities in the world, is massed around the shores of a crescent-shaped bay, backed by hills, which the city climbs. On these hills are the villas and their gardens. So universal here are the sloping sites that most of the buildings are one story higher in front than in the rear. This condition of slope led to the building of interior courts at different levels, and the consequent special development of the stairway as a prime feature; while the gardens which here were often grouped about the house on all sides, but chiefly on the front and back, were commonly at different levels and, besides being connected with each other outdoors by ramps and stairways, were entered from different stories of the house. In fact, it was outside the house in the gardens that the staircase first attained great splendor, and from this it gradually became a more and more important feature in the interior.

The Piazza di Siena in the Grounds of the Villa Borghese, Rome.

Among the most interesting gardens to-day are the Rosazza Gardens, and those of the Villa Scassi, in Sampierdarena, near Genoa. A plan and section of this latter have already been given. Compared with Florentine and Roman designs, it shows a marked tendency to larger plots, less cut up into elaborate patterns, while in these plots the flowering plants are commonly arranged simply in parallel rows, without even a quincuncial placement. These characters, so noticeable in this particular plan, seem to be typical of the Genoese garden plans, so far as I have been able to study them. Despite this fact, however, and the fact that the force of the winds was an obstacle to tree growth, and despite the poverty of the water-supply on the heights about the town, it was here in the Genoese gardens, the glory of which came comparatively late, that in some respects, notably in luxury, splendor and richness of treatment, the Italian garden culminated.

We have seen that the Italian garden was above all formal, the meeting-place of formal nature with informal art, to serve as an effective transition from formal art to informal nature. And while, compared with the English garden, the Italian garden inclines more to art and less to nature, is more formal and classic, and less naturalistic, compared with the French the reverse is the case. While the Italian garden often shows unpleasant extravagances, these are few, we have seen, and of slight importance compared with its many beauties, and the sound principles it generally, in so wonderful a way, exemplifies. While again, it may be true, as Burckhardt thinks, that once take the Italian garden from its setting, it would be a gem of very different water; that take away its situation at the foot of the glorious Apennines — its beautiful views of land and sea — and set it down in a comparatively uninteresting plain, its effect would be heavy; while all this may be true, I would reply that a good garden can never fairly be judged apart from its natural surroundings, in response to the expression of which it was designed, and that one of the marked characters of the Italian garden is that, with all its formalism, it has been consciously adapted to its environment. Finally, while it is certainly true that by its essential nature the Italian garden never can supply to the Teuton mind and heart and soul all the comfort, æsthetic pleasure and soul-inspiration, that they derive from the more naturalistic, less obviously artistic garden, it is plainly to be recognized that the Italian garden (indeed any garden) cannot, either, justly be judged apart from the dispositions and tastes and instincts of the race whose pleasure or profit its design was aimed to serve; and certainly few would question that this type of garden did serve completely the needs and desires of the classically disposed Italian people. The present growing fashion of the importation of this type of garden into the United States is, however, a distinctly different thing from an appreciation of its value in its natural home; and the wisdom of its widespread use in this country might be questioned — even where the type suits the climate and landscape — on the score of the different natural instincts of the race.

Study and consequent appreciation of the Italian garden make one feel with overwhelmingly renewed force all the inestimable gain in the effectiveness of the house which the carefully-designed grounds give. They make one feel that every house with any claim whatever to beauty and attractiveness — particularly every such suburban or country house — should have, wherever possible, ornamental grounds about it, and (if it be a house of architectural pretention) at first formal and leading the eye from the formal design of the house to the unrestraint of the natural landscape — in order that there shall here be no abrupt transition, "but a middle ground where Nature is indeed present, but restrained by architectural lines." With us in this country, this is coming to be more and more widely recognized, felt and understood. But while the study of this Italian type thus increases an appreciation of the possible beauty and value of the formal garden as such, and teaches us many of the fundamental principles which should govern its design, let us not imitate it blindly, or seek to remove it bodily from its natural, geographical and ethnological setting to which it owes so much of its value. Rather let us, appreciating and admiring it in its own native environment, content ourselves, as our best landscape architects have done, with gathering from our study of it the vital principles of formal gardening which it has to teach. Especially let us not fail to recognize how much we owe to it for the transmission to us of the preserved and accumulated development of the ages, made more beautiful, more rich; how much we owe to the men, who, living and working in one of the most fruitful periods of the history of the world's art, put these developments, these traditions into concrete form, and by the influence of their own creative imagination, carrying the evolution farther still, gave us the Italian garden; "so frankly artistic, yet so subtly blending itself into the natural surroundings, into the distant plain, the fringe of purple hills, the gorgeous panorama of the Alps with its background of glowing sky."


View in the Garden of the Villa Borghese, Rome.

James Sturgis Pray.

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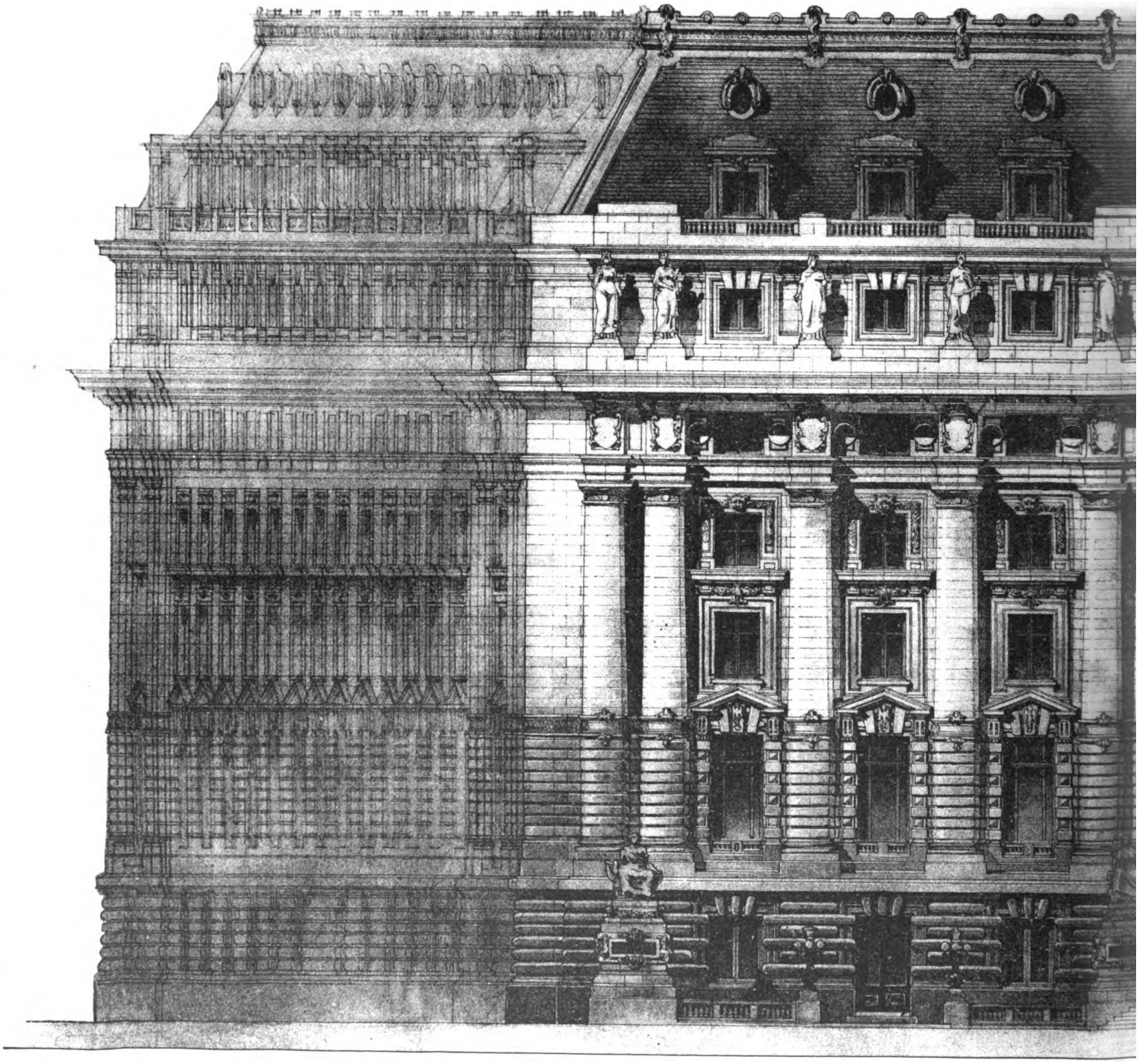

ORIGINAL AND SUCCESSFUL COMPETITIVE DESIGN FOR

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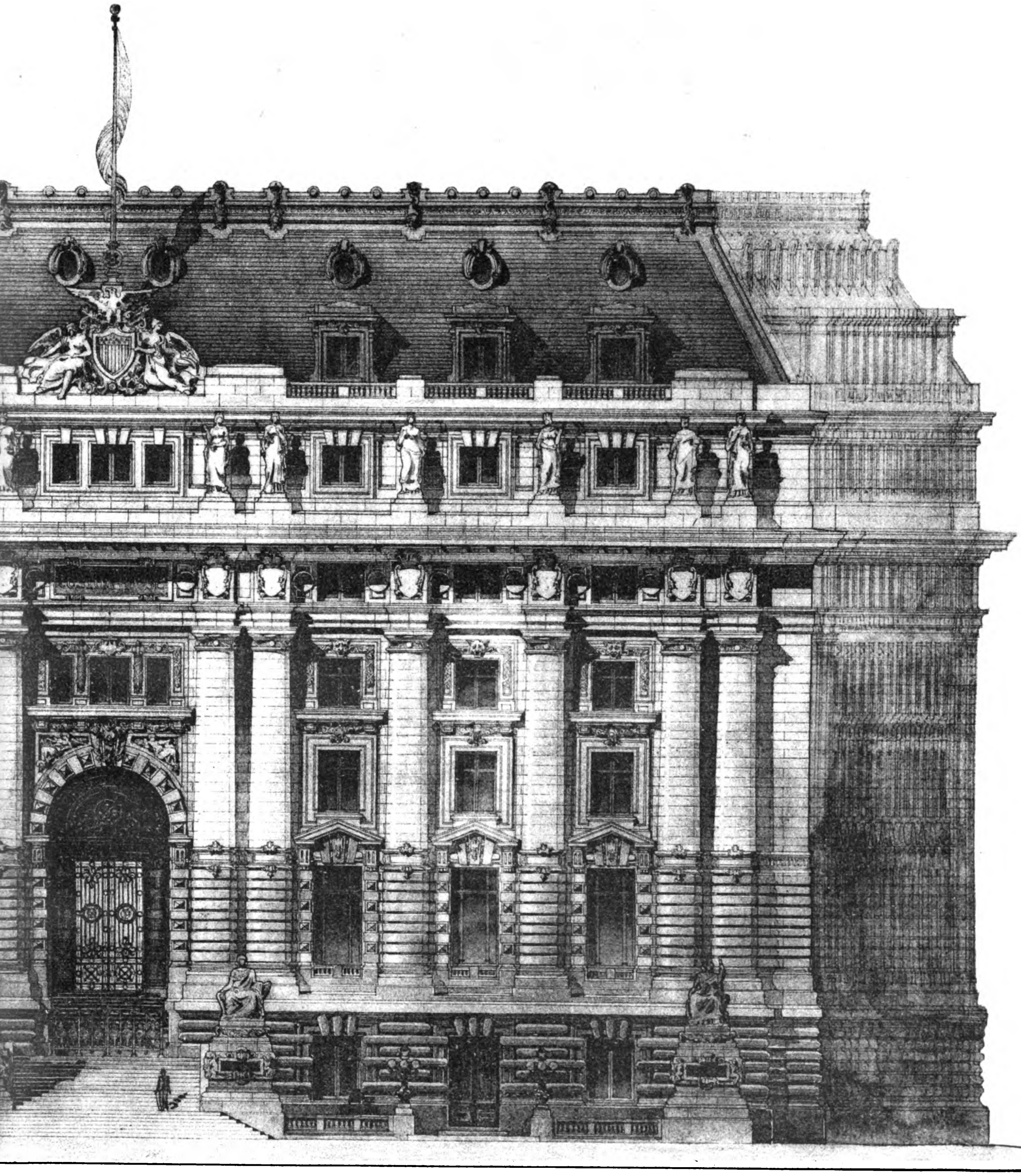

N ELEVATION.

HE UNITED STATES CUSTOM HOUSE, NEW YORK, N. Y.

ARCHITECT.

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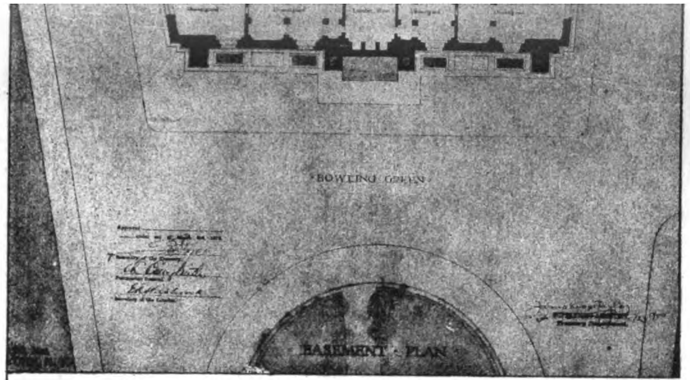

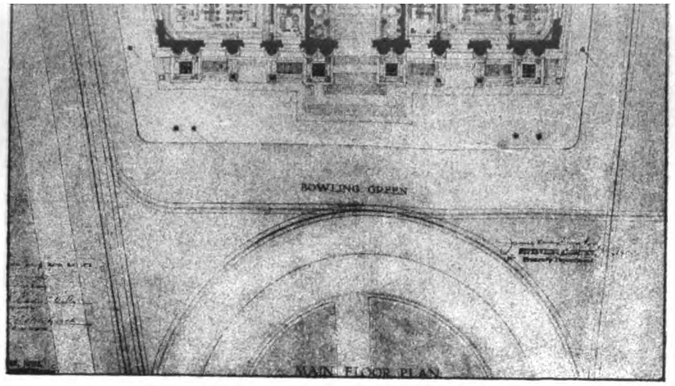

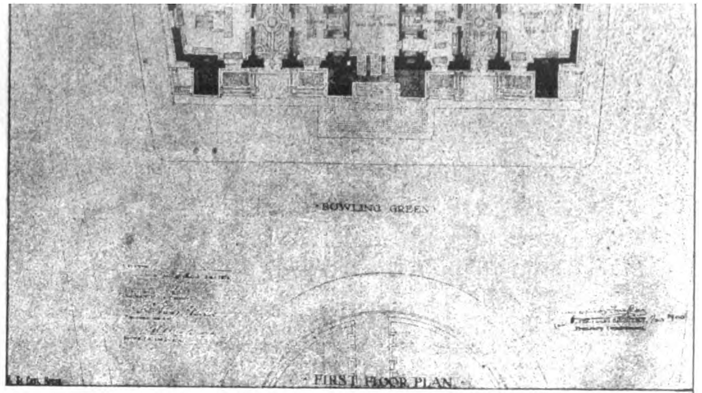

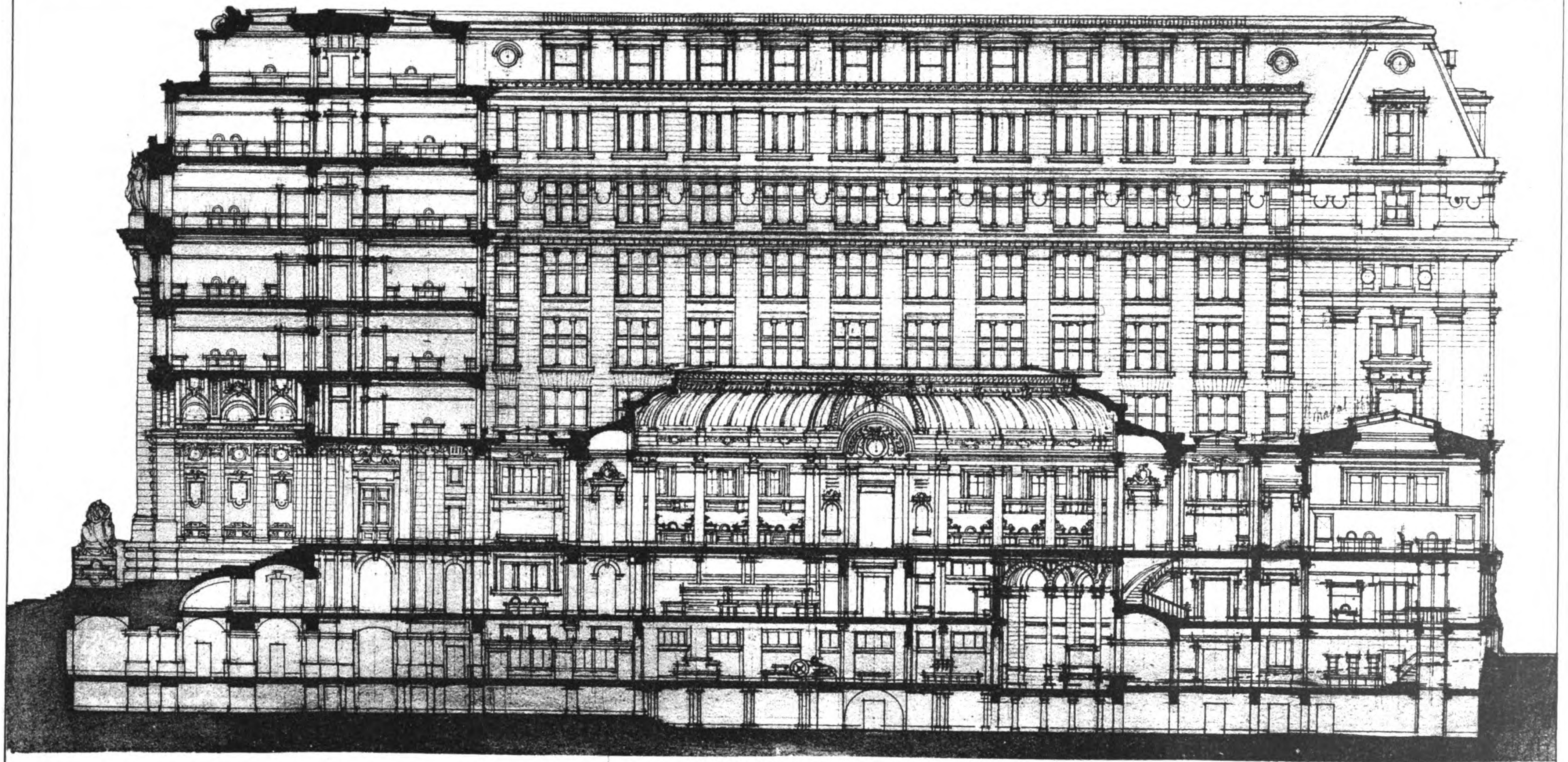

LONGITUDINAL SECTION.

DESIGN FOR THE UNITED STATES CUSTOM HOUSE, NEW YORK, N. Y.

CASS GILBERT, ARCHITECT.

American Architect and Building News, Mar. 24, 1900. No. 1265

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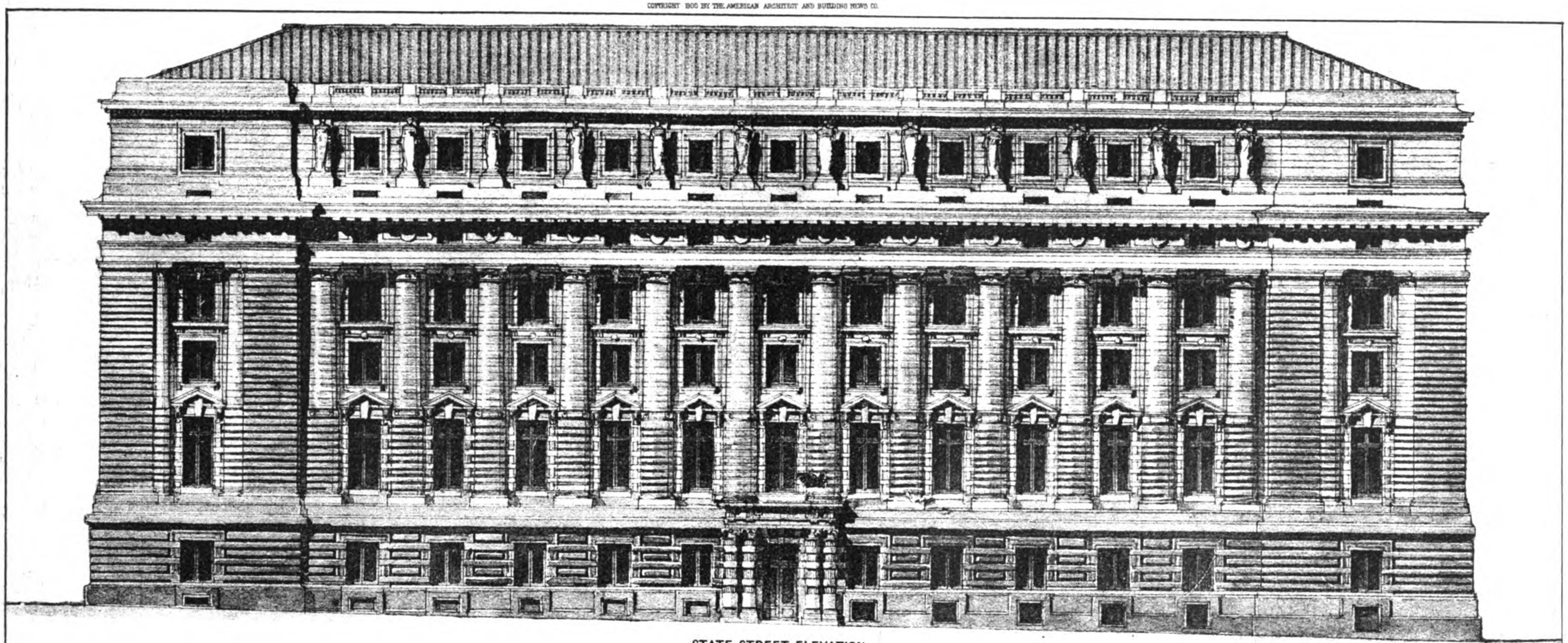
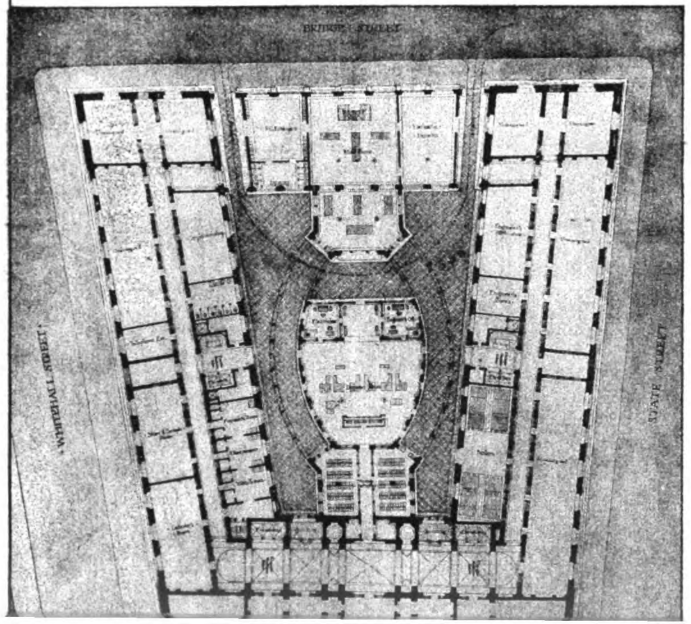
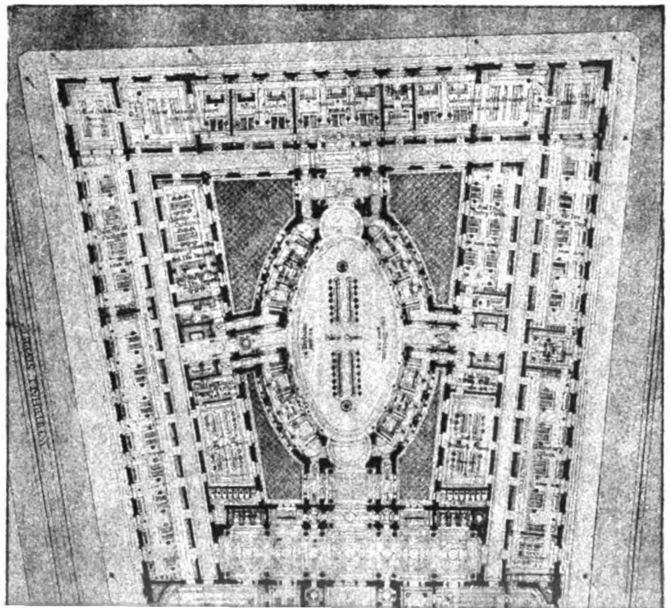
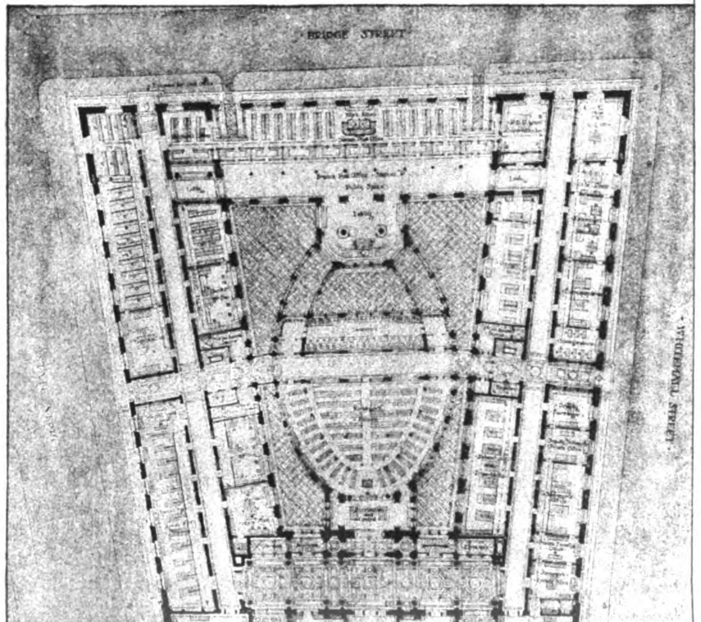


STATE STREET ELEVATION.







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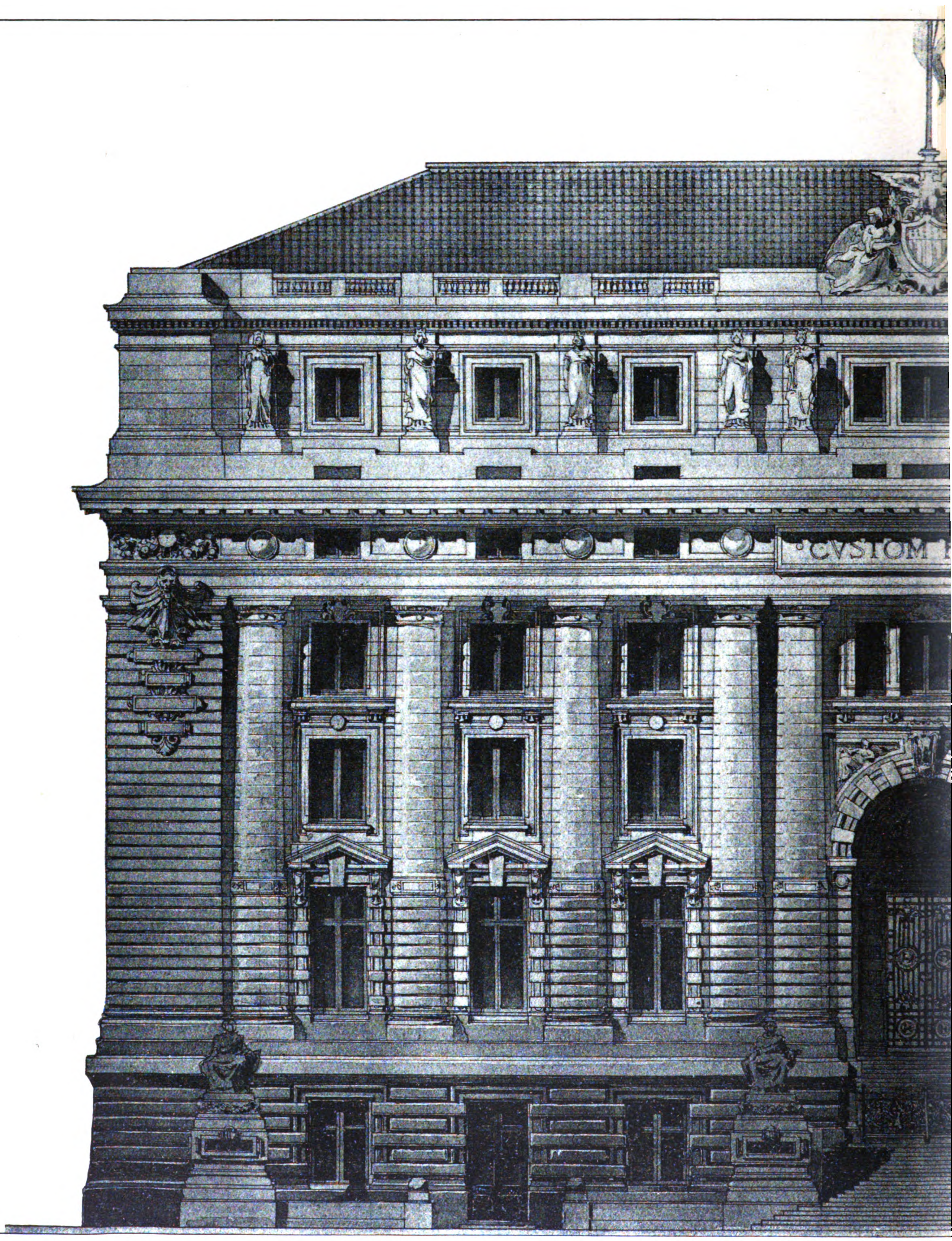

BOWLING GREEN E

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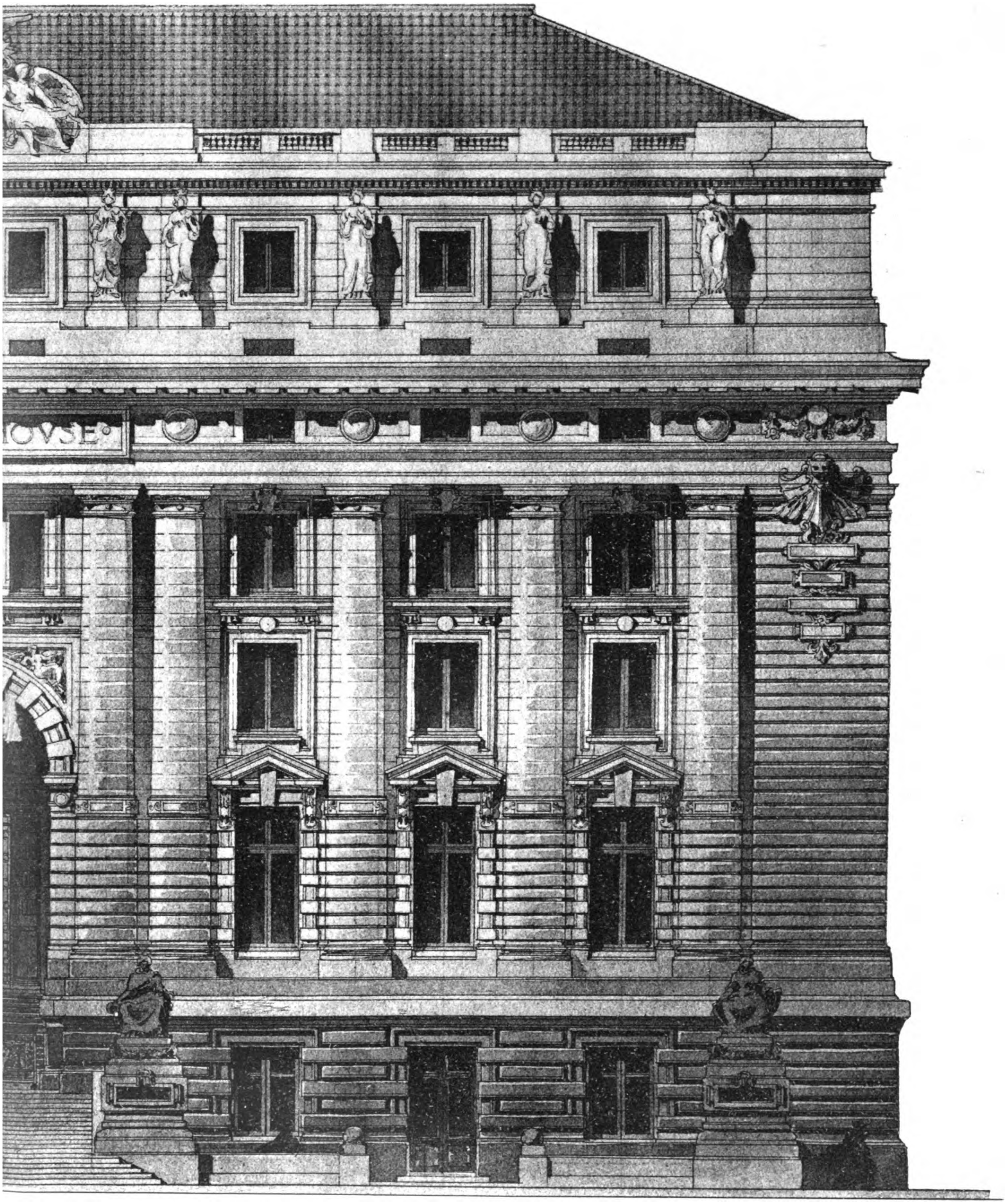


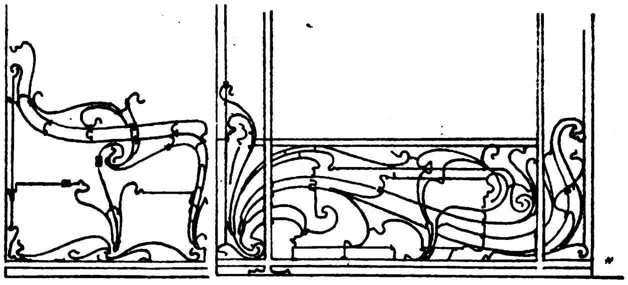
EVATION.

STATES CUSTOM HOUSE, NEW YORK, N. Y.

CHITECT.

HELIOTYPE PRINTING CO. BOSTON

THE FIFTEENTH ANNUAL EXHIBITION OF THE ARCHITECTURAL LEAGUE OF NEW YORK.



Interior Balustrade in a House at Brussels, Belgium. After *La Revue des Arts decoratifs.*

WE have found much divergence of opinion among the members of the profession in New York regarding the merits of the exhibition of the Architectural League just closed; but the majority seem to feel that from an architectural point-of-view it was not altogether satisfactory. So much is sacrificed to the commercial side that one wonders whether if the exhibition is to be conducted on the same lines in the future, it is not time to change its name, and call it the "Arts and Crafts Exhibition."

In fact, we are told that the main object of the show is to make it attractive enough to the general public to lure them into the shop, where they may fall in love with the choice architectural wares displayed upon the walls, and where the smart young architect, as well as the more renowned, may draw attention to himself, by means of popularized and suggestive renderings. In other words, that the Architectural League is the bill-board where the architects advertise themselves, and that the standard of merit is placed just high enough, so that the "big fellows" will not feel in too poor company. Doubtless, the general public needs still, in this country, just such a stimulus to their architectural sensibilities; but are the members of the profession strong enough yet to allow themselves to be carried wholly away by that one idea, in their only opportunity during the year to educate one another by serious example, and to form that *esprit de corps* which is so essential to any vital development of an architectural epoch? One longs for an exhibition without an illustrated catalogue, heavy with glazed paper and voluminous advertisements; an exhibition where drawings are sent in on the boards, from the architect's offices, without gilt bands and colored borders; an exhibition conducted by the wisest and ripest judgment that the profession can produce — not by the best "hustlers" — and where the jury shall observe a dignified mean between the extreme of exclusiveness and partiality to any one taste or school of work on the one hand, and that of over-leniency to the work of men who have made their names and who allow their office machines to turn out work unworthy of them: and there are such men here in New York. Perhaps the day may come when we shall have an architectural exhibition of the architects, for the architects, and by the architects.

This, however, was unquestionably not the idea of the managers of this exhibition; witness the fact that the opportunity of years, perhaps of a lifetime, in the having a collection of monumental drawings the like of which in seriousness and completeness was probably never before produced, served only to embarass the committee; and all but the prize set were shoved away up two flights of stairs, where they were shown in a room so small that one could not stand off far enough to properly study them.

This was, doubtless, a pain to the hanging-committee, but the painters and decorators could not be robbed of any of their traditional space, and if the whole "Phœbe A. Hearst Architectural Plan for the University of California" Competition had been put in the Vanderbilt Gallery, there would have been no room for all the pretty perspectives in water-color; so no doubt they did the best they could under the circumstances.

Monsieur Bénard was given the honor of the central alcove opposite the entrance-door, and one might have at least enjoyed his plan, had it not been that a huge bust of a fine statue by Martiny came first in the way, and when that had been pulled out, the plaster model of Thomas Shields Clarke's "Alma Mater," for Princeton, formed a screen up to within ten feet of it. However, there are those who claim that M. Bénard's plan expressed no scheme of *ensemble*, but was a thin connecting of independent groups; so if there be any justice in this criticism, we suppose that it must have been arranged by the friends of M. Bénard, so that one might only examine his plan in detail.

We shall not enter into a discussion of the relative merits of these California drawings here; they are so familiar to every one now, and have been so much discussed, that all of us have been told by now what and how to think about them, and have been able through reproductions to form our own judgment. But all have not been able to see them, and they are indeed remarkable.

The drawings of M. Bénard are finished to an astonishing degree of completeness in every detail, from the lines of Mosaic to the faces of the people indicated in the exterior perspective of the gymnasium, and all without the slightest sign of hurry or uncertainty, a thing we can seldom say of a Frenchman's competition drawings, and with good reason, in that the Frenchman says it "values better" to pass all the time one can possibly afford in studying the problem, leaving barely enough to "render" in at the end.

After the Bénard alcove, the most noticeable things were the plaster-models. The monument to "Alma Mater," for Princeton, above mentioned, consists of a straight screen or fence over which are spaced telamones holding grape-arbors, and in the vertical axis of which is placed a little Greek pediment supported by columns in front and filled up in the back, thus forming a canopy over a seated figure of Alma Mater; before her an athletic youth, nude — why not with the usual costume in which our athletic youths are wont to appear in this year of our Lord, 1900? — is presenting, with a very conscious air of looking his prettiest, a wreath. Alma Mater looks stoically indifferent, but the young man, undaunted, urges that if she will but step upon the wreath he will give her a jolly toss right over his head, — and the whole performance looks sentimental and unimpressive, especially so because of the very bad proportionment of the relative parts, both of the statues to each other and of the architectural members. The details are in good taste, but it is hopelessly "sculptor's architecture."

On the wall above the Bénard alcove was an enormous plaster cast of the full-size model of the pediment of the new Appellate Court Building, Madison Square, New York, by Charles Henry Niehaus, sculptor. The modelling is skilful, though the composition carries little significance, the figures being too small for the size of the *fronton*, and like the building itself, they will be unimpressive.

Messrs Babb, Cook & Willard presented a colored scale-model of the house they are building in New York for Mr. Andrew Carnegie. Though oppressively institutional in character the design shows great self-containment and an entire absence of pretentiousness or display, in which respect it is very superior to most of the millionaires' houses which have lately been put up in New York. The gardens were also modelled, and suggest a very charming arrangement of terraces, trellises and avenues of trees. Messrs. Boring & Tilton exhibited rear elevations and perspectives of the new Immigrant Station, Ellis Island, N. Y., which seems to us one of the best buildings in point-of-view of general composition which has so far been produced in America.

Over the stairway hung some finely-washed geometrical drawings of what is known as the Pierre Puget door at Toulon, France, by P. Dumenil. One sought out with interest the accepted design for the new Stock Exchange by Mr. George B. Post, and the competition drawings for the same, among which that of Mr. Bruce Price was conspicuous. Also the accepted design for the new Custom-house by Mr. Cass Gilbert, which in spite of its being based on a theory that most great designers have pronounced impossible of solution, still claims serious attention because of its general character and expression. The effort to pack three stories in the height of an order is impossible in a short building, because the intercolumniation is bound to become cramped, especially in an office-building (which this practically amounts to being), where windows must be placed near together, and the result usually is, as in this case, that the building looks to be much smaller than its real size.

Messrs. Frank Miles Day & Bros. exhibited numerous attractive photographs of their work; among other things a dining-room and formal garden of a house on Locust Street, Philadelphia.

We noticed with special interest Messrs. Rossiter & Wright's Hackensack Golf Club-house; a sketch for proposed hotel in Tarrytown, N. Y., by the same authors; a sketch of a house for Charles W. Clark, Esq., Butte, Mont., by Lord, Hewlett & Hull; a competition design for Wilkesbarre Court-house by the same authors; a competition drawing for Yale College Memorial Buildings by Mr. R. H. Robertson; a charming water-color of a residence by Mr. Oscar Enders; an elevation of workingmen's cottages at Palmerton, Pa., by Mr. W. E. Stone; a cow-barn and hen-house by H. J. Carlson, very attractive; a rendered elevation by Mr. Charles Montaland of the famous Porte-Cochère in the Rue St. Louis en l'Isle, Paris, one of the historic motives of Monsieur César Daly, and a very successful design for a railroad station by Mr. Cass Gilbert, successful all but the belfry on the ridge: a Belgian-Gothic belfry, however, could hardly be expected to crown to advantage a modern French façade.

A good expression of what we hope the French influence in this country will not attain to is to be seen in the drawings of the New York Life Insurance Company's new buildings in Paris, a design so shocking from the purist's point-of-view, that we can imagine a student of Ruskin or a follower of the revered Mr. Charles Eliot Norton being thrown by it into deep melancholy.

The English exhibit was very attractive. Mr. Beresford Pite's medal drawing for a West End Club, and a number of designs for country work by Messrs. Ernest George & Yates were, perhaps, the most noteworthy contributions. These Englishmen seem to have time to amuse themselves with their work as well as treat it seriously. We notice one man, Mr. C. R. Ashbee, has drawn out some elevations for a little building of brick and wood, on parchment, in a quaint and mannered fashion, and colored with delicate tints. It reminded us of the spirit of the ancient plan of the St. Gall monastery, reproduced in Fergusson's "*History of Architecture.*" Mr. T. Raffles Davison had some very characteristic "Rambling Sketches," always attractive and interesting. A sketch of a house at Haslemere, Surrey, by Ernest Newton, was full of sweet and simple English country charm, and a house at Bakewell, Derbyshire, by Mr. Wm. C. Hays, assured us, as well, that the charms of England are not transient.

We were especially interested in the designs for a municipal mansion for an English town and for a grammar school, by Mr. Arnold Mitchell; a drawing of the staircase at the Guildhall, Cambridge, by Mr. John Belcher, and a Kate Greenaway house, by Mr. Lionel Francis Crane.

Mr. Grosvenor Atterbury exhibited a number of attractive sketches of some of his recent work. Several very individual houses with cement walls and roofs not apparent, for Mr. H. O. Havemeyer, at Islip, L. I., and a house for Mr. Albert Herter at East Hampton, which is much more pleasing in execution than in the sketch, were especially noticeable. One of the best things in the exhibition was a preliminary sketch for and photographs of a stable at Belle Isle Park, Detroit, Mich., by Mr. Geo. D. Mason, full of character and expressiveness. Mr. Bruce Price exhibited a model for a residence on upper Fifth Avenue of very monumental and impressive character.

Messrs. McKim, Mead & White exhibited two water-color sketches by Mr. Hughson Hawley, one of the New York University Library, and the other of the Cornell University Medical College. Little & O'Connor exhibited a very pleasing design for a house of Mr. Albert L. Johnson, Fort Hamilton, N. Y. Mr. R. W. Gibson exhibited an interesting new building for the Hearst School for Girls, P. E. Cathedral, Washington, D. C.; Mr. Geo. B. Post his design for the new Department of Justice Building in Washington, and a Gothic arch to span a street in Newark. Mr. Claude Fayette Bragdon showed a very charming little perspective of a house for Mr. Nathan Stein. Mr. Henry B. Pennell exhibited four of his Rotch Travelling-scholarship *envois*, a very fine drawing of the lower part of the façade of Amiens Cathedral, a more brilliantly colored interior perspective of the transept of St. Peter's at Rome, an interior of St. Mark's at Venice, and an interior of the church of St. Francis at Assisi, Italy, all showing great faithfulness of drawing and ability in the handling of the brush.

Conspicuous in the exhibition was a cardboard model of a house of English character at Morristown, by Messrs. Howells & Stokes. Mr. Donn Barber showed a handsome and skilful design for a proposed office-building. Messrs. Howard Cauldwell & Morgan exhibited an elevation, rendered by Mr. J. M. Lyle, of the new Hotel Essex, now building on Madison Avenue, at the corner of 56th Street. It bids fair to be one of the most interesting of our tall structures, especially in color, the ground-story and *entresol* being of light-gray stone, which follows up to the frieze through a main-surface of red-brick laid in Flemish bond with black headers. The frieze is all stone, while the attic, dormers and chimneys take up the brick again, which with the stone finish around the windows ties the whole together handsomely.

Messrs. Andrews, Jacques & Rantoul sent a good perspective drawing of their Worcester County Court-house — very simple and pure Classic taste — suggesting remotely the influence of Mr. Hunt's Fogg Museum at Harvard College.

A pretty design for a formal garden by Miss Beatrix Jones; a design for a Science Hall in Canton, China, by Messrs. C. W. & A. A. Stoughton — Chinese in the character of its architecture; the premiated design for the Young Men's Christian Association, New Haven, Conn., by Messrs. James E. Ware & Son, all excited careful consideration.

The plan and street elevation for the New York Central & Hudson River Railroad Ferry-house at 42d Street, New York, by George A. Nichols, showed an interesting departure which we have long been sighing for — some architectural treatment of the chief entrance-gates to the City of New York. If it be true that "first impressions go a long way," how far indeed must the poor foreign visitor go to recover from his first impressions on landing in this country at one of our dismal ferry-houses.

In the basement we noticed with attention "The Seasons" by Mr. Van D. Perrine; a competition drawing for the Mt. Sinai Hospital by Messrs. Herts & Tallant; a design for a proposed Methodist Episcopal Church, Dorchester, Mass., by Mr. George F. Newton, — charming water-color; a sketch of a part of the Convent of Vallambrosa by Mr. Edward Darby Boit; a mantel in billard-room of Lindenhaus, Düsseldorf, Germany, by Mr. Harrison C. Townsend; a model of a southern residence by Mr. Willis Polk — the opposite extreme of the Carnegie House, being almost heterogeneous in its picturesque elements, though Classic; an École des Beaux-Arts *projet* by Mr. Louis R. Metcalfe; an elevation and section of a school of architecture, the prize design of the McKim Fellowship Competition, 1899, by Mr. W. E. Parsons — a very skilful *projet*; an elevation of a city house and a fountain in Algiers, École des Beaux-Arts work by Mr. C. S. Rodman; a plan for a Pan-American Exposition, Cornell University School of Architecture problem, by Mr. R. A. Tissington; same study by Mr. Frank Eurich, and a sketch of the well in the cloister of the Hospital of St. Jean at Angers by Mr. John Russell Pope — were all very interesting.

In the east gallery we were attracted by a colored elevation of the end of a dining-room in a house for W. Campbell Clark, Esq., Newark, N. J., by Messrs. Howard, Cauldwell & Morgan; a sketch for a library ceiling, a study in oil, by Mr. Louis Schaettle; a polished iron screen from a design by Mr. R. M. Hunt, executed by Wm. H. Jackson & Co.; besides numerous specimens of fine workmanship in metal by John Williams & Co.; a decoration by Mr. Nicola D'Ascenzo; an arrangement of Moravian tiles by Mr. H. C. Mercer; an enamelled terra-cotta medallion by Messrs. Keen & Mead; a mantel-facing composed of scenes from Kipling's "*Jungle Book*" by Mr. Russell Crook; and a mantel-facing of animal tiles by Mr. George P. Kendrick; a model of an inkstand and a model for a fountain, very quaint and very individual, by Mr. Edward R. Smith, the librarian of the Avery Library, Columbia College, and a design for a hunting-club medal by Mr. F. G. R. Roth:

In the centre gallery a Dancing Faun and the Toilet of the Young Faun by Mr. Attelio Piccirilli; a Cock-fight by Mr. Orazio Piccirilli; a sketch-model of a Victory for the colonnade of the Dewey Arch by Mr. Herbert Adams:

In the west gallery, by an unusually fine architectural drawing of a fragment of the cloister at Arles by Mr. J. M. Gleeson; by two Rougevin drawings (École des Beaux-Arts), one of a fireplace in a hunting-lodge and the other a pier between two windows in a palace, by Mr. Tony Garnier, — two very remarkably brilliant drawings by this remarkably brilliant man; a *portière* of finely-tooled, gilded and painted leather, cut out in silhouette and applied to a background of green and red plush, making with the heavy leather fringe an exceedingly rich and ornamental effect, exhibited by H. F. Huber & Co.; a pleasing little model of an andiron by Mr. E. B. Stevens, being composed of a little nude figure on a standard crouching down to warm its back; a panel of burnt-wood, being a scene from a Greek play, by Mr. Raphael A. Weed; an æsthetic Japanese side-wall treatment and fireplace by Mr. Theo. Hanford Pond; a very handsome sketch of a Louis XIII hall-chair by Theo. Hofstatter & Co; an elevation of a music-room by Mr. Taber Sears; a clock-face etched in brass, with parts of the design, such as the bunches of grapes, etc., picked out in colored enamels, and the following rhyme in graceful letters below the face: —

> "Come fill the Cup, and in the fire of Spring
> Your Winter Garment of Repentance fling.
> The Bird of Time has but a little way
> To flutter — and the Bird is on the Wing."

The entrance gallery, the abode of the painters, held some very worthy contributions. Mr. John LaFarge exhibited a stunning piece of decoration done for the Church of the Paulist Fathers, New York, an angel holding a flaming globe in the centre of Saturnian rings. He loses none of his boldness in the use of color as the years go on. Mr. Robert Blum sent the studies for his decoration in the hall of the Mendelssohn Club, together with photographs of the finished work, charming productions reminding one of the spirit of Fortuny and the sentiment of Alma-Tadema; Mr. Richard Newton exhibited a frieze composed of a long central panel and two short side-pieces representing a mediæval tournament. The subject lends itself admirably to a frieze and is handled very skilfully, especially in the grouping and drawing of the horses; it suggests an attractive end to some library or dining-hall.

Another frieze, of horses and riders, was exhibited by Mr. William Walton, of Aholibah's Garden, quaint and charming. Mr. Robert V. V. Sewell sent three very attractive canvases, tympana of doors, semi-Classic in feeling and full of Algerian atmosphere; a little copy or study of his beautiful painting in the Grolier Club, "Grolier in the House of Aldus," by François Flameng; and some fine drawings by Mr. E. H. Blashfield, being studies for his Appellate Court Decorations.

We must also mention "Moths," a design for a hall-ceiling, executed for a house in New York, by Mr. G. R. Barse, Jr.; an imaginative combination of little figures grouped together at symmetrical intervals: "Aurora," a cartoon for a figure in a ceiling in the residence of F. W. Vanderbilt, Esq., New York; a strong, fine drawing by Mr. Edward Simmons; some clever decorative studies by Mr. W. B. Van Ingen, and a design for a Japanese room in the Yerkes house, by a Japanese artist, Mr. K. Okakura; a decorative study called "Industrial Arts," by Mr. Augustus Koopman; a very successful color-print by Mr. Oliver Ainsley, and a Joan of Arc frieze by Mr. Joseph M. Jones, Jr.

It goes without the saying of it that there were many admirable and noteworthy things in the exhibition which we have not made mention of, and also that the mere mention we make of so many of them is due to lack of space rather than to lack of interest, but we all look rather to the excellent reproductions in our architectural magazines of to-day than to descriptions, however graphic. And there are so many architectural magazines that one feels as a rule very confident that the good things are sure to be reproduced in some one of them whenever the author is willing that they should be. Some day we may see an "Architecture of the Architectural League," inspired by the yearly "Architecture des Salons," where all the best architectural things in the *salons* are reproduced and offered to the public at "*bon marché*."

WHY RUSKIN REFUSED THE ROYAL GOLD MEDAL.

IN noticing the death of Mr. Ruskin three weeks since, says the *Builder*, we alluded to the consternation that was awakened at the conference of architects, held under the auspices of the R. I. B. A., in June, 1874, when it was announced that Professor Ruskin, who was expected to attend and receive the Royal Gold Medal that evening, had declined to be its recipient. By a majority of one it was decided not to have Mr. Ruskin's letter read, and hitherto its contents have been known only to the members of the Institute Council for that period. The letter, with some further explanatory ones, has now been published in the

Institute *Journal*, and even at this interval of time will be read with interest. It is as follows:

Rome, 20th May, 1874.

DEAR SIR,—I have before me your favor of the 25th March, advising me of the honor done me by the Royal Institute of British Architects in adjudging to me the Royal Medal for 1874.

The delay in my reply has been owing to the necessity for prolonged reflection before adopting the line of conduct which, after such reflection, I still find to be the only one open to me. Permit me in explanation of it to state four facts.

1. The tomb of the Cardinal Brancaccio at Naples, which, so far as my present knowledge extends, is the most important example in Europe of the architectural sculpture of the 15th century, is at present used as the lumber-room of the church in which it stands; and I found last month the folds of the drapery of its caryatides closed by cobwebs.
2. The church of San Miniato at Florence, the most beautiful example of the 12th-century architecture in that city, has been turned into a common cemetery.
3. As I was drawing the cross carved on the spandrel of the western arch of the church of Santa Maria della Spina at Pisa, in 1872, it was dashed to pieces by a mason before my eyes, and the pieces carried away, that a model might be carved from them, and set up in its stead.
4. The railway at Furness is carried so near the Abbey that the ruins vibrate at the passing of every luggage train; and the buildings connected with the station block the window over the altar of the Abbot's Chapel, so that nothing else can be seen through it.

These four facts are, as the members of the Institute know, only too accurately illustrative of the general agency of the public, and of the builders employed by them, on the existing architecture of Europe;—consisting in the injurious neglect of the most precious works; in the destruction, under the name of restoration, of the most celebrated works, for the sake of emolument; and in the sacrifice of any and all to temporary convenience.

For the existence of this state of things we, the members, actual and honorary, of the Institute of British Architects, are assuredly answerable, at least in England; and under these circumstances I cannot but feel that it is no time for us to play at adjudging medals to each other; and must, for my own poor part, very solemnly decline concurrence in such complimentary formalities, whether as they regard others or myself. For we have, none of us, it seems to me, any right remaining either to bestow or to receive honors; and least of all those which proceed from the Grace, and involve the Dignity, of the British Throne.

May I beg, Sir, that in communicating my reply to the members of the Institute you will convey to them at the same time the assurance of my personal respect, and of the profound regret with which I find myself compelled to decline their intended kindness and courtesy?—I have the honor to be, Sir, your obedient servant, JOHN RUSKIN.

CHARLES L. EASTLAKE, ESQ., *Secretary*.

In a subsequent letter to Sir Gilbert Scott, then the President of the Institute, dated from Assisi, June 12, 1874, Mr. Ruskin says:

That it should have been a friend who "suggested" my name to the Institute makes me bitterly sorry to put this friend in (what however only because *he* calls it so, I admit to be) a ridiculous position. But that the Institute acted under his "suggestion" very much adds to such personal motive of pride as I have in refusing the Medal. Had they offered it me after I wrote the *Stones of Venice*, twenty years ago, I should have gratefully and respectfully accepted it. I now, proudly, refuse it. But I have never—very solemnly I say it—allowed my pride to stand in the way of either courtesy or duty. I very solemnly deny, and wish in the face of the public to deny, and am thankful, *though* pained by it, for this opportunity of publicly denying that either the Architects' Institute or any other dominant association of artists in England, France, or Italy, is, or can be in the present day, an association for the improvement of architecture, or of any other art by such dominant associations professed. The primary object of all such Associations is to exalt the power of their own profession over the mind of the public, power being in the present century synonymous with wealth. And the root of all the evil and ruin which this century has seen (and it has destroyed already more than the French Revolution did of what *that* had left) is summed up in four words, "Commission on the cost." And, from any body of architects, however small, who will bind themselves henceforward to accept a given salary (whatever amount, according to their standing, they may choose to name) for their daily work, and to work with their men (or, at least, with their own hands, on the sculpture of the building) while they take such salary—from such a body I will take a medal to-morrow.

That I have myself failed, I have, as you tell me, again and again confessed. That I have made the most fatal mistakes I have also confessed.

That I have received no help, but met the most scornful opposition, in every effort I have ever made which came into collision with the pecuniary interests of modern builders, may, perhaps in a degree more than I know, have occasioned my failure.

But I now recognise many of my mistakes, and hope yet to accomplish something before I die. It may be, but I trust will not be, single handed, but, at all events, it must be in association only with men who know their business.

NO STEEPLE BY INJUNCTION.—There is a church in a Wisconsin town which has not had a steeple since 1862. In that year a violent wind took the steeple off the church. It crashed into a near-by house, and the owner of the house asked the courts to restrain the church people from building another spire. His application was granted, and the order has held for thirty-eight years.—*N. Y. Evening Post.*

ÆSTHETIC INVENTION.[1]

THE American architect, Mr. Leopold Eidlitz, was the first writer that I know who affirmed that æsthetic invention in architecture was still possible. He maintains that æsthetic advance is possible if we go the right way about it. His book entitled "*The Nature and Functions of Art, Especially of Architecture*" is the only book I know that treats the subject philosophically and analytically. The book of Vitruvius is more like a cookery-book, in which recipes are given, than a treatise on architecture. Vitruvius saw this himself, when he said that rules will never supply the place of talent.

All the Italian Renaissance books on architecture are guides to the reproduction of Roman work. Viollet-le-Duc's dictionary is a manual of Gothic architecture.

Mr. Eidlitz sweeps away much of the accumulated rubbish of the modern notion of inspiration by showing the elaborate training that the actors and musicians have to go through, and the rehearsals they have to attend, to enable them to act or play together smoothly, and the mathematical studies that are necessary for musical composers;[2] but his greatest gift is in holding out hopes that architecture, stuck in the mud for so many centuries, may progress again, if architects will again follow the method pursued by the Gothic architects, viz, by trying to know what is wanting and continually striving to build it: though, from the absence of symbolism in the present day, it is a hard matter. Fergusson, however, seemed to think that some originality might be secured by ignoring all the lessons of the past, and getting architects to compete for a church or chapel where style was to be abandoned. Nothing can be more true than that, if we absurdly suppose any period of past architecture was perfect, we cannot and do not want to improve on it, and if we are absolutely idle and idiotic we cannot succeed.

Mr. Eidlitz sent a letter to the Royal Institute of British Architects which was read, and was almost the subject of merriment to many of the hearers who had been trained on the usual architectural history, although his letter was fraught with the greatest promise to those who think on the subject. In the first place he stated as a self-evident fact that architecture depended mainly on structural science, and that the knowledge of statics was its foundation, and he then pointed out that in the works of Nature, more particularly in those of animated Nature, character and beauty of form were dependent on the perfection with which animals were fitted to their purpose, and that in the present teaching this was not taught. He says: "Of the differences of the beauty of a church, a palace, a court-house, a library, and a cottage, in the sense in which we distinguish between the beauty of a humming-bird, an eagle, a bull, a horse, a lion, or a tiger, there is no definition in any educational institution." I think it must be obvious to any one not blinded by the pursuit of antiquarianism that a knowledge of statics is absolutely necessary to every architect, and that by pursuing the statical method we not only get the right form and proportion, but the true ratio of every structural feature.

[*Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.*]

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[Gelatine Print.]

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[1] Extract from a Royal Academy lecture by Professor Aitchison.

[2] If Mr. Eidlitz expressed any such opinion he is certainly wrong. A knowledge of the physics of sound, and of the ratio of vibrations which produce various sounds, is necessary for a scientific analysis of musical scales, etc.; but the great composers never troubled their heads about that; all *they* wanted to know was how to combine the accepted intervals of the European scale (which is quite arbitrary) so as to produce effective and expressive music. Beethoven was probably one of the most radically unscientific men that ever lived; and no knowledge of the physics of sound would have affected his compositions or his power of originating music.—ED. (London) *Builder*.

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A COMPETITIVE DESIGN FOR THE UNITED STATES CUSTOM-HOUSE, NEW YORK, N. Y. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

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ENTRANCE-FRONT: "WOODGATE," SUTTON COLDFIELD, ENG. MR. W. H. BIDLAKE, ARCHITECT.

GARDEN-FRONT OF THE SAME.

NOTES AND CLIPPINGS

The Trust Movement. — The New York *Journal of Commerce* has compiled a series of interesting statistics illustrating the progress of the trust movement in this country. The figures presented, which are claimed to have been compiled with great conservatism, show that during the forty years beginning with 1860, the aggregate capitalization of the industrial consolidations actually incorporated exceeded the enormous total of $4,000,000,000. Of these, the incorporations in the iron and steel trade easily beat all other industrial classes in amount, the aggregate capitalization of consolidations in that industry being shown to have reached a total of over $853,000,000. — *Metal Worker.*

A Cedar Eighteen Feet Thick. — J. R. Young, manager of the Burke Shingle Mill, while cruising out timber, found a cedar-tree near the road from South Bend to the Palix River, which he measured and found to be 56 feet in circumference, or about eighteen feet in diameter. It was over seventy-five feet from the ground to the first limb. The most famous and heretofore largest cedar known in the State is near Sedro-Woolley, the stump of which measures 14 feet in diameter. The top of it was smoothed off and used as a dancing platform. Photographs of it, crowded with people craning their necks to get their faces taken, have been scattered widely. This stump really consisted of two trees grown together, but the tree discovered by Mr. Young is a single one, nor is it swell butted. — *Seattle Post-Intelligencer.*

New Orleans. — The territory upon which the City of New Orleans is built has an area of 24,932 acres, on both the left and right banks of the Mississippi River, within levees. It has an elevation of 33 to 20 feet, Cairo Datum; this slope occurring within 6,000 to 9,000 feet of the river banks, leaving a large surface practically level, with an elevation of about twenty-one Cairo Datum, or some eighteen feet below the high water of the Mississippi River and some four feet below that of Lake Pontchartrain; or, as the mean elevation of the Gulf is 21.26 Cairo Datum, never at any time above the level of the surrounding bodies of water. Six thousand acres of this territory are improved, being paved or covered by buildings; the remaining portion is composed of farms, gardens, suburban lands or swamps. All of this territory is now surrounded by levees, the elevation of which is 41 Cairo Datum on the river-front and 27 Cairo Datum along the upper and lower boundary lines, the lake-front and navigation canals. — *A. F. Thead, C. E.*

The Railroads and Timber Culture. — The question of systematic timber culture is commencing to be considered by the officials of American railways, and in some cases competent forestry officials have been secured to supervise the work. In one instance a plantation that was made about fifteen years ago is beginning to yield, and from an initial outlay of $128,000, it is estimated that 1,280,000 trees, worth $2 each standing, will be obtained within the next ten years, affording a net profit of $2,432,000. In this plantation the trees were the *Catalpa speciosa*, and when grown are straight and clear of limbs up to a small crown. The railroads of the United States consume about 1,000,000 acres of timber each year, as posts and ties have to be so frequently renewed, and the expense is no small item. As many railways already have landscape gardeners, it has been suggested that practical forestry be added to their duties, and the trees, in additior to their value as timber, would be used to beautify the grounds of the stations along the way. — *N. Y. Evening Post.*

Ruinous Competition Averted. — By the vigilance of the customs officials at New York American producers have been saved from a serious danger. An art-dealer imported the "Holy Family," of Rubens, entering its value at $25,000. But it has been discovered that the picture sold at auction in London for $43,000, and a re-appraisement has been ordered in consequence. If the authorities had not been awake this transaction might have been the beginning of a deluge of Rubenses, Raphaels, Titians, Michael Angelos, and Correggios that would have left our beloved country no better off in respect to art than the effete monarchies of the Old World. The walls of every art-gallery in America might have been disfigured by old masters produced by the pauper labor of Europe. It is well known that we have in this country a large and flourishing old-master industry, carried on by self-respecting laborers who raise families, pay taxes, and vote. Any American millionaire who wants a Velasquez or a Tintoretto can have one produced on short notice and on reasonable terms by artists who draw living wages, with an hour off for lunch and holidays on the Fourth of July, Christmas, Thanksgiving Day, and Washington's Birthday. Those who prefer to patronize the sweatshop labor of Europe should be properly discouraged. The person who tried to smuggle in the "Holy Family" at reduced rates may try to excuse himself on the plea that Rubens is dead. But that only aggravates the offense. It is bad enough for our artists to be asked to compete with live European pauper laborers. It is an insult to expect them to compete with dead ones. — *Philadelphia North American.*

Demolishing for the Paris Exposition. — Works of destruction, as well as vast constructive operations, are included in the general scheme of the coming Exhibition, in order to make room for the Alexander Third Avenue, which is to stretch in a straight line from the Champs Elysées, where it will open out opposite the Presidential Palace, to the Invalides over the new bridge, also named after the Emperor of all the Russias. The old Palais de l'Industrie, once looked upon as an architectural adornment of Paris, has gone the way of all buildings which cease to please the public taste. Demolishing operations have just begun upon the last vestige of the discarded palace which remained standing. Quite a large crowd of sympathetic onlookers gathered to watch the final work of destruction upon the archway once forming the entrance to the departed building, and among those present some old Parisians looked as if they felt almost like wiping away a tear for the late Palais de l'Industrie. The construction, with its enormous and ungraceful iron frame and glass roof, was not a thing of much beauty. But, judging of what is to be seen of the two massive, not to say clumsy, Palaces of Fine-Arts in stone, which are permanently to take its place, it is a question whether the new edifices constitute any very great improvement upon the old. Meanwhile melancholy mementos of the demolished building are to be had by those who fancy such souvenirs at no considerable sacrifice. A monumental head of Minerva had been presented by the contractors to the President of the Republic; but other vestiges of the Palace are for sale at altogether reasonable prices. Five francs each for sculptured allegorical figures, small size; £2 for a stone lion and £6 for a monumental goddess, seated, are among the market-values quoted. Articles likely to fetch higher prices are the woodwork and panellings of the Empress Eugénie's drawing-room, in which she received distinguished visitors at the 1855 Exhibition, held in the old Palais de l'Industrie, which had been erected for the occasion. The most valuable relic of all will only be brought to light in a week or so, when the workmen unearth the foundation-stone of the building, containing a casket in which were inclosed at the inauguration, according to traditional custom, various moneys, and a document bearing autographs of Napoleon III and Baron Haussmann. — *Paris Correspondence of the London Telegraph.*

Heating all Outdoors. — An extraordinary requirement in a water-heating job is described in the letter we reprint below from a well-known contractor, who asks other men engaged in the heating business to express their views as to whether he may be fairly expected to heat a building with the windows open. Whatever the opinions expressed may be, it is his intention to bring them to the attention of his customers and abide by them. No stipulation was made for heating with the windows open in the original contract: "Last fall I installed a direct water house-heating plant with a guarantee of a capacity equal to 70 degrees in zero weather. I made the plant ample, as I usually rate a plant. I also placed a thermostat on it, which does work within 1 degree when the house is closed. But during the night the fire burns out in an effort to maintain 70 degrees with windows open to the number of four. The owner insists on 70 degrees with windows open; that it is ridiculous to ask a party to sleep with windows closed; that no decent person will do so; that I must maintain fire and heat as though the windows were closed. I wish to know if I am wrong in saying to the owner that this is an unusual thing to ask of a heating man, and unjust. If I am wrong, I wish to know it." — *The Metal Worker.*

Sign Advertising in France. — Clamors have been raised from time to time against the numerous advertisements stuck on posts along railway lines in France. People eager to see the fields and forests, as they roll through the country, complain that their views are intercepted every quarter of a mile or so by some huge advertisement setting forth the virtues of special absinthes, medicines or tonics. In some instances the ordinary zinc-plate on posts is replaced by an enormous bottle, which destroys the effect of picturesque Norman, Breton or southern villages. The objections to these advertisements became so numerous that the Council-General of the Seine passed a resolution on the subject, and hoped that the railway companies would act in the matter in a manner likely to give satisfaction to the protesting public. Consequently the directors of the Orléans Line have sent out a circular directing all the tradespeople who have advertisements along the company's railway from Paris to Bordeaux to remove the same within a month. It is now hoped that other companies will follow this example, but it remains to be seen if the northern, western and minor lines will display so much alacrity as the Orléans company in stopping a considerable source of revenue. — *Paris Correspondence of the London Telegraph.*

An Electric Blasting Cartridge. — An Italian electrician has invented an electric cartridge, which he offers as a substitute for dynamite and smokeless-powder, for mines, rock-blasting, and heavy ordnance. The composition used in the cartridges is carbonates of potash and chloride of ammonia, the proportion varying according as it is to be used for blasting effects in rock work or powder effects in ordnance. The discharge is effected by an electric current or spark, which produces instantaneous electrolytic effects upon the chemicals which are contained in separated compartments of the cartridge. The inventor claims that the cartridges, until subjected to the action of electricity, are entirely inoffensive and perfectly safe, so that there will be no necessity of isolating the magazines where they are stored. — *N. Y. Evening Post.*

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A CORRESPONDENT in a Western town nonchalantly tosses to us, for answer, four questions upon which he and his fellow-practitioners hold different opinions, and this is hardly to be wondered at, as they all concern points of professional procedure rather than matters of building practice: all are relatively new points in modern practice, and so have not, with one possible exception, been firmly fixed by custom and precedent in one way or the other. But as all four questions are of importance and not clearly decided, they form excellent topics for discussion, and we hope that in spite of, or because of, what we are about to say, those of our readers who have given thought to the matters will express themselves, and so either support or controvert our own line of argument. The questions arise over a certain fourteen-story bank and office building which is to cost about three-quarters of a million of dollars, and the first is as to the propriety of charging five per cent on the total cost in view of the fact that a large number of the office-stories are mere repetitions one of another. Of course, each case is surrounded by its own conditions, which have to be given proper weight, and even the most pronounced upholders of the letter of the law would have to acknowledge that in their own practice they had come upon cases where they found themselves fully justified, to their own professional conscience, in making the charge for their service less than the law allows. At first blush it would seem that a modern office-building affords just the instance where a departure from the recognized rate would not only be allowable but advisable. Yet, in spite of the fact that the architect's powers as an artist are called into play mainly in devising the treatment of the lower three and the upper three stories, and although his skill as a planner is largely limited to fixing the typical plan for one office-floor, it must be borne in mind that the usual rate of payment is devised not only to cover these acquirements of his, but others, the most important of which, perhaps, is his ability as a man of business; and as, in all lines of business, compensation is made to keep pace, more or less well, with the amount of money involved in executing that business, it is not unreasonable to argue that the same relative portion of his fee earned by an architect in his capacity as a business-man in erecting an eighty-thousand-dollar building is equally earned by him in erecting an eight-hundred-thousand-dollar one. The history of practice in this country and abroad shows pretty conclusively that the five-per-cent rule is fairly logical and can be safely applied to most cases. It must be remembered, too, that while in the early years of its career, when conditions were very different in the building world from what they are now, the Institute had incorporated in its schedule a recommendation that only three per cent should be charged for stores and warehouses, — buildings which, in that they called for little architectural expression and were largely repetitions of a single constructive unit, might be compared to the mid-height stories of an office-building — there is no such recommendation in the present schedule, and for the reason that such buildings in these days are something vastly different from what they were in the sixties. There are two or three other factors in the question worth glancing at: First, the courts are showing a tendency to hold architects responsible for their mistakes in pecuniary damages, much as architects are held in France to-day, and compensation for this certain anxiety and preparation for a possible assessment of damages in case of mishap should certainly be allowed for in computing the charge that an architect may rightfully make for his work; and mishaps may arise in the building of the mid-height stories as often as in the upper or lower ones. Next, as every one knows, and just as prevails in all trades and all professions, the gains that arise out of one job have to cover not only the rightful profit but the loss that occurred on the last, or will grow out of the next one. Why, then, may not an architect make a "fat thing" out of an occasional building where a typical floor is several times repeated? To be sure, it may seem to that particular client a piece of injustice to him, but that client is the very man who will scold because the druggist charges a dollar for a decoction which really costs three cents, forgetting how great a boon it is to every one to know that at the corner, where rents and expenses must be high, he can in his moment of dire need procure the needed styptic or cathartic. In spite of all these things, there are circumstances whereunder it might be wrong for an architect to charge five per cent on an office-building of great cost. Circumstances govern cases, and the practitioner may give them due weight in reaching his decision, without fear of penalties, whether he finally decide to charge less or more than the rate recommended in the accepted schedule.

THE next question asks whether the clerk-of-works should be paid by the architect out of his own pocket. He distinctly should not, and yet in this country he too often is, because of the fact that a clerk-of-works is a new element in American practice, and architects, finding they have difficulty enough in getting clients to agree to pay the usual full fee to themselves, hesitate to demand also that the client should pay for a clerk-of-works. But architects agree to give only supervision, not superintendence — which would imply the neglecting of other work to give constant personal attention to one job — and if the client demands constant superintendence it is clearly his duty to pay for it himself. The result too often is that the architect assigns to the post some draughtsman from his regular office force, who does as well as he can and does not really add to his employer's expenses. Still this compromise method is not to be recommended and has most of the disadvantages, so far as the client's real interests go, of a makeshift. The continuous presence on the job of a trained superintendent or clerk-of-works is worth to the client all he costs him.

THE third question is, "Should the cost of the steel safety-deposit vaults, which is a large item, be considered as part of the cost of the building upon which the architect's commission is based?" Our answer to this question is deducible, we think, from our discussion of the first one. The architect was desired to design a building of which safety-deposit vaults were stated to be an integral feature. Why, then, should the cost of such vaults be excluded from the cost of the building which the architect was required to create? The steel vaults are unquestionably, in the legal sense, "fixtures," and there is no fixture in a building which may not properly be taxed for the architect's commission. If the client has bound himself to pay a percentage on the total cost of the building he has no right to murmur if in computing that cost is included the cost of steel vaults and all other fixtures. But here, again, circumstances must have their weight and the architect must decide for himself — perhaps with some little heed to what would be good business policy — what under the circumstances it is reasonable for him to do.

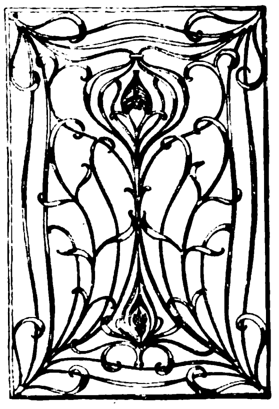
THE fourth question is the most difficult of all, because in it are involved elements of practice that had no existence at the time when the percentage system was adopted by the profession in all countries. "Should the architect pay for expert engineering service required in the erection of the steel frame and the installation of the mechanical plant?" Here we understand the questioner to lay special stress upon the word "expert." As applied to the particular instance in hand, it may be answered that if the architect happens to have paid out of his own pocket for the expert engineering assistance required in this particular building, he certainly need have no qualms about including in the cost of the building on which he computes his own commission both the cost of the mid-height stories and of the safety vaults. As a general proposition, however, it should be noticed that the question, a certainly debatable one, is all the more so because of the different status of practitioners in all that regards the furnishings of their pockets and of their heads. For the sake of the dignity of the profession one would like to answer that, unquestionably, the architect should in all cases pay for all expert service required, and in the case of an architect who has, at length, won a steady and lucrative practice, and has, of course, so organized his regular office force as to have included in it men of an expertness sufficiently real to cope with all but very extraordinary conditions, there is no reason why he should not provide his own expert service. But in the case of architects in moderate practice, who do not normally have a corps of experts on their pay-roll, the case is somewhat different, all the more if they are young men and their client has already stipulated that in view of their youth they must not think of including in the cost of the building, say, the cost of mid-height stories or deposit vaults. The young man must generally have greater recourse to outside expert help than his older fellows, and he can less spare from his income the fee that must go to these outside aids, so a plausible argument could be made in support of his contention that the expert service should be paid by the client. But this course would have the disadvantage of at once raising the question whether the architect can properly include in the cost of building, on which his own fee is to be computed, the cost of the steel frame which he did not plan, or the roof trusses which he did not design. Moreover, by having the experts responsible not to him but to the owner, his control over the job as a whole would be weakened and new causes for trouble with the contractors would arise continually through having so many different masters on the job, each asserting a final and complete authority. In some cases the client might be willing to make an "allowance" outright for expert service, for it is certain that the customary rate of payment was established when an architect's duties were less complex than they now are and the ratio of net profit higher, but as the suggestion could hardly be made without putting the confidence of the client in his architect at risk, it would be as well, perhaps, not to raise the issue. On the whole, then, it seems best — until the body of the profession adopts a definite ruling — for the architect to hire and pay his own experts, but only in cases where the client pays the full commission. This question was most admirably presented from all sides in the paper read by Mr. Bradlee before the Convention of the American Institute of Architects, at Washington, in 1898, a paper of which the discussion was most unwisely prevented by the presiding officer.

THE notorious "Westminster Chambers" case continues to occupy the attention of the courts, the Massachusetts Legislature and the newspapers, and this is all the more remarkable seeing that the architect has threatened with suits for damages pretty much every one who has opposed the carrying out of the building as he originally designed it. The contractors for the building, Messrs. Woodbury & Leighton, who now have a larger pecuniary interest at stake than any one, have published a very specious argument in defence of the bill for relief introduced in their behalf. In its essence their statement is merely an appeal for mercy, and much as we regret the difficulties of their situation, we cannot but feel that they deserve no more mercy than is usually granted to those who wilfully break the law. They evidently feel that they make an unanswerable plea, even a valid defence, when they say "lawful or unlawful, it is not in the public interest to pull down the frieze and cornice, which is the only effect of the [Attorney-General's] suit, and leave the building, as it will then be left, an object of public reproach and an injury to every building in Copley Square." To such a plea as this it seems as if every one who believes that laws should be upheld and executed, must answer that they would like to see — for a while at least — even in Copley Square, just the kind of monument above described, standing there to declare to all her citizens that Massachusetts has not one kind of law for the poor and a more agreeable kind for the rich. The men interested in the Westminster Chambers chose to "gamble on the chances" that, in one way or another, they could avoid compliance with the clear intent and meaning of the act of 1898, which limited the height of their building to ninety feet. Their choice made, they can hardly be blamed for making every effort to win their game, but our respect for them would be greater if they showed that they had nerve enough to be good losers. If their building is to become a "public reproach" — but why "public"? — it is through their own choice, and if they object to having their names associated with so pitiful an object, they ought to have made a better forecast of the probable outcome.

FOUR years ago the Massachusetts Supreme Court declared that the "picketing" of an employer's places of business by his striking former employés, aided by sympathizing union allies, was illegal and that the strikers could be enjoined from maintaining such pickets. This decision rested somewhat, but only in a very slight degree, on the allegation that the pickets resorted to methods of intimidation, and even to physical violence, where persuasion proved unsuccessful in preventing new men from taking the places voluntarily vacated by the strikers. The general tenor of the decision, if we remember it correctly, left it clearly inferable that the Court was not quite certain whether peaceable picketing might not be allowable. But the decision, in spite of this weakness, was nevertheless one of very great importance, and if the courts of last resort in other States would but affirm this decision it would go far to remove all possibility of riot and bloodshed as ordinary concomitants of strikes. In default of this action on this side of the Atlantic, the forces of law and order have been greatly strengthened by a case just decided in England, which declares that not even "peaceful picketing" can be tolerated by the powers vested with the duty of upholding and executing the law of the land, and Lyons *vs.* Wilkins has now become a leading case of vast importance. The employers first applied for, and secured, an interlocutory injunction against the maintenance of pickets by their former workmen, and on appeal by the workmen the temporary injunction was affirmed by the Court of Appeal. The employers next secured a perpetual injunction, which the strikers contested, but lost their case in the same way. Then, as their last and only recourse, the strikers appealed to the House of Lords, but before their appeal could be heard they decided to withdraw it and so confess to be hopeless all attempts to prevent employers from honestly and quietly conducting their own business with the aid of such workmen as were willing to accept their terms of employment. This English case is all the more interesting just now from the fact that Oliver Wendell Holmes, Jr., the Associate Judge who, in the Massachusetts case, wrote a strong dissenting opinion, which was in part of its argument not a little socialistic, has just taken his seat as Chief Justice of the Massachusetts Supreme Court, and finds that about the same time the views he advanced in the picketing case of four years ago are overruled by the highest English court.

AN announcement, which seemingly emanates from St. Paul, Minn., runs to the effect that the National Educational Association has arranged a competition in essays on the seating, the lighting, the heating and the ventilating of public school-houses. Particulars are not given, save that the competitions are open to aspirants from any country and that prizes of two hundred and one hundred dollars will be awarded as first and second prizes in each of the four competitions mentioned. Mr. Irwin Shepard, secretary of the Association, and Mr. W. T. Harris, United States Commissioner of Education, are charged with the conduct of these competitions. That this undertaking was seemingly inaugurated in the Northwest, which is so largely settled by persons of Scandinavian descent, is only what might be expected from a community where these intelligent fellow-citizens of ours are so numerous. At the time when the first permanent settlement of Swedes was made in Delaware, in 1638, there "was not in the Kingdom of Sweden a peasant child who could not read and write," as an old chronicler puts it, and this high standard of education which has been maintained not only in Scandinavia itself to this day, but in this country, has, of course, been fostered in Scandinavian families by our common-school system, and it is most natural that they should take an active interest in procuring the best school buildings for their children.

NOTES ON SOME EUROPEAN SYSTEMS OF FOREST ADMINISTRATION.[1] — III.



Iron Grille.

THE law of 1882, concerning the administration of the forests and more particularly dealing with procedure in works of necessary reforestation, has admirably stood the test of criticism.

The reforms it proposed to institute were conceived in a spirit of sympathy with the conditions and necessities of the people. The experience of former mistakes was taken into account.

M. Miane points out two weak places in its framework, however, the first in fixing too low the penalties for infringement, the second in making cases of trespass triable by the mayors of communes, who are, he thinks, in all cases too much inclined to deal leniently with such offences. The provision under which the boundaries of reforestation operations are to be in all cases determined by parliament caused general satisfaction. The people felt themselves thus placed under the protection of their elected representatives.

The regulation of the pasture-lands by mayors of communes, a duty heretofore somewhat perfunctorily discharged, was enforced. The retirement from use, "*mise en défens*," was recognized as the best scheme as yet put forward for the conservation and regeneration of degraded lands.

But while the law of 1882 seems admirably adapted to secure the benefits intended, the results of its application have yet fallen somewhat short of the best.

In concession to a great deal of very excusable protest against the planting of trees upon degraded pastures, especially in localities where pastoral pursuits formed the sole resource of the peasants, returfing was substituted with good results.

The indemnities provided for lands sequestered made good the most serious defect of the enactment of 1860. The recovery of sequestered lands by their owners was facilitated, one-half of reforested lands and one-fourth of returfed being relinquished to Government as an offset to the accrued benefits from improvement.

In actual working, however, the administrative procedure in some cases set aside these advantages. The indemnities were evaded. The people showed opposition to accepting what seemed to them the doubtful benefits of a system whose present cost was more obvious than a vague and distant promised profit.

They even used force here and there to stop the works, and at one place burned over the new plantations. The influence of the wealthier herdsmen was thrown against a system which threatened to interfere with their business. The ignorance and credulity of the mountaineers made it an easy matter to persuade them that in these works the Government was sacrificing them to the agricultural interest of the valley lands.

It was complained that the law dealt somewhat too summarily with the property of the communes; that, in fact, this forcible assumption of private rights by the State was confiscation. The complete expropriations of the 1860 Act had been modified to permit recovery of property on payment of the cost of works or relinquishment of title to one-half of the area improved, but it was maintained, with justice, that both laws bore too hard on the pastoral mountain-folk. Not only the degraded pastures but those still in good state were expropriated — the latter as a measure of conservation.

In certain communes the Act of 1860 worked an absolute extinction of rights to three-fourths of the pasturage. Private owners were obliged to cede part of their property through inability to pay the cost of operations forced upon them. It was urged that reforestation was being pushed beyond what was practical and necessary. Operations projected to cover an area of 1,200,000 hectares were thought to be excessive. The opponents of the reform claimed that geologic and general conditions were insufficiently considered. It was set down as bad policy to put cultivable lands under forest.

The law of 1864 brought in the popular substitute of returfing to meet these objections. But returfing was somewhat overdone, and the regulations governing the work were not such as to satisfy all interests. Local rights and privileges were not in the opinion of the inhabitants sufficiently guaranteed. The law was charged with having granted too arbitrary powers to the Administration of Forests, and their operations became more and more unpopular. Preventive measures were sometimes neglected, the credits voted being inadequate to cover more than the most urgent cases.

From 1840 to 1876 the State had expended some seventy-eight millions of francs to repair the ravages of torrents, while not over one million annually was devoted to preventive operations. From these several causes had grown a distrust of Governmental reforestation projects. Meanwhile various attempts at corrective legislation, and the accumulation of experience, were leading up to the comprehensive legislation of 1882.

In this the chief new features were: 1. The conservation of certain lands, important to the scheme of reforestation and control of torrents, by means of suspension of the right of use, "*la mise en défens*." 2. The strict regulation of the rights of pasturage. "*La mise en défens*" was put in action by the Administration. Its maximum duration was fixed at ten years. The owner was entitled to indemnity in an amount established by the *Conseil de préfecture*. At the end of the ten years the proprietor could force the State to acquire the lands by paying for them outright. Meanwhile the Administration was empowered to carry out such works as might be deemed advisable, without, however, radically changing the character of the lands. The last provision was meant to check an unreasonable conversion of cultivable and pasture lands into forest.

Indemnity was provided as well for communal pasture-lands withdrawn from use.

These were made subject to the following provisions: —

It became the duty of mayors of communes to report annually to the *préfet* of the district, in form prescribed, the regulation of the pasturage within their purview for the ensuing year. These plans were subject to modification by the *préfet*, who was also empowered to have them drawn up by a commission in case of a mayor failing to perform this duty to the satisfaction of the law and the Administration. Disregard of these regulations was punishable under the penal code.

Thus the general scheme was, to institute reforestation works where the need of them was greatest, to merely retire certain lands from use where the conditions were less urgent, and, finally, to assist natural regeneration of the pasture-lands by strict regulations of their use. Local interests were held in view. This last was the strongest feature of the law and the one which saved it from becoming a dead letter, as had its immediate predecessors.

The consent of parliament being required to determine the extent and to fix the location of Administrative operations, and the latter's working-plans being subject to the approval of the deputies, the people felt their rights to be amply safeguarded. Further, there could be no dispossession or deprivation of use without indemnity.

The mountain pastoral peoples, whose interests had been sacrificed in previous legislation to schemes for the benefit of the valley lands, were well taken care of under the new law, which left as much as possible of the pasture-lands and improved the grazing area. This law favored no one region to the detriment of another. It was logical, based upon true economic principles, being "conceived," as the excellent M. Miane insists, "in a spirit of sympathy for the people." Based upon experience it retained the good points of precedent legislation, while discarding mistakes. It realized that a law to be effective must have the people's support. Instead of a general scheme applied with small regard to special conditions it provided a series of treatments differing with the local needs. "It reconciles," says Miane, "the struggle against destruction of the forests with the local interests of the people."

Under the provisions of this finally-achieved adequate legislation, the law of 1882, the correction of torrential streams and the restoration of the forests of France have been zealously pushed forward. The torrents came first because their case was urgent. Their ravages must have a check. It was out of the question to wait until the growth of replanted forests should extinguish their harmfulness.

The first attack was upon the scouring of the torrent, cross and lengthwise scouring. The tactics in this case were to enlarge the bed and make it permanent. With admirable engineering skill the worst of these ravagers have been tamed.

Widened here, dammed there, and canalized, the wild Alpine brook is again the harmless servant of man. The mad destructive rush of storm-waters is checked by the lessened slope of the bed. This is effected by barriers of masonry or of logs, which make deposits upon which wattlings and hedges of quick-growing shrubs are set to make permanent the gain of soil and stability.

On soils where tree-growth is impossible, whatever vegetation is best suited to the ground, brush, thorn-bushes or what not, is substituted. The point is to hold the ground in place.

Wherever possible, woodland is created as the only sure means to prevent denudation, distribute the waters, and supply the requisite fertilizing humus. Brushwood does not renew itself, yields small harvest, and will not thrive above 1,200 metres of altitude. The altitude, with other conditions, determines the sort of wood to be planted. Between 600 and 1,000 metres lies the belt of oak, poplar, elm, ash and chestnut. At from 1,000 to 1,800 metres come the pines and larches. At from 1,800 to 3,000 metres flourish the larch and stone-pine (*pinus cembro*) alone.

The problem set before the Administration of Forests is a knotty one. In places the work of replanting the denuded mountain slopes has had to be repeated several times before the young growth was able to hold its own against adverse conditions. Severity of climate, rapid variations of temperature, the crumbling action of frost and thaw have to be stoutly combated. Work in progress on troublesome torrent-beds may be swept down bodily by an untimely rainstorm.

To quote briefly from M. Miane's tabulation of work done, we note: from 1860 to 1868 the "Facultative Works" on properties communal, corporate and private, covered an area of 58,383 hectares; for the same period the "Obligatory Works" (urgent) covered 21,320 hectares, of which 2,743 hectares was returfing; grand total, then, 79,703 hectares, which, as the hectare is 2.47 + acres, runs to nearly two hundred thousand acres redeemed and replanted.

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[1] Continued from No. 1261, page 61.

It should be noted that the work under the "Obligatory" class, although aggregating little more than one-fourth of the whole, represents far more difficulties overcome.

The falling-off in the amount of work done between 1868 and 1882 was due largely to the unfavorable status of legislation which has been set forth. After 1882 there was new energy displayed. The boundaries of districts undergoing reforestation, which were very large, were subjected to revision. Where possible, "*la mise en défens*" was substituted for replanting, that is to say, the natural recuperation of the lands was encouraged by their simple withdrawal from use. A total area of 316,000 hectares, of which about two-thirds belonged to the Alps, was designated for redemption. The end of 1888 found about one-fifth of the work accomplished. In 1895 a fourth had been restored or reforested. Fifteen years gave a total of 86,000 hectares redeemed by the State foresters. During the same period the State had also aided the restoration of 84,000 hectares of communal and private lands.

The Budget of January 1, 1879, showed the following expenditures: —

In the Alps	8,200,000 francs.
" " Cevennes and central plateau	2,400,000 "
" " Pyrennees	900,000 "
Total	11,500,000 francs.

The Budget of January 1, 1889, shows an almost quintuple increase of expenditure for the precedent ten years, under the new law: —

Acquisition of lands (69,576 hectares)	12,410,000 francs.
Operations in the "Obligatory" class	25,390,000 "
Subvention of "Facultative" reforestry	6,050,000 "
Expense general and for the *personnel* (10 years)	7,820,000 "
Total	51,670,000 francs.

(These figures are from M. Zolla in the "*Dictionnaire d' Economie Politique.*")

Of the 25,000,000 francs set down for operations only 7,000,000 went to works of reforestation, or sylviculture, properly so-called. The balance was expended in the correction of torrents, and in auxiliary works, such as roads, barracks, studies, etc. Of the whole amount, 15,000,000 francs were expended in the Alps.

M. Miane gives a supplemental table based upon information from the Administration of Forests, which brings these figures down over the five years from 1889 to 1893, inclusive: —

Reforested	17,141 hectares.	Cost — 16,400,000 francs.
Restored	8,931 "	

In 1893 the Chamber voted operations on about twenty-two thousand hectares more, mainly in the Alps, work on which is about completed.

M. Miane estimates that the State must further acquire in the neighborhood of two hundred thousand hectares of land. As to the results obtained from these extended operations and considerable outlay, we may quote some examples from Demontzey: —

1. The torrent of Bourget was a destructive torrent which menaced several villages in the valley of the Barcelonnette. Its extinction was secured in fourteen years by planting a young forest of 400 hectares, which covers the whole area of its upper basin.

2. The torrent of Rion-Bourdoux in the same valley was the worst and most incurable of the lot, and renowned for its devastation. Its cone of dejection, of an area of 240 hectares, was traversed for a distance of three kilometres by the *route nationale*, the highway having continually suffered badly. This torrent is now conquered and confined to a defined and fortified bed upon its cone, leaving 200 hectares upon the cone to be used for cultivation.

3. The Combe de Péguère, above the thermal establishments of Cauterets, la Paillière, and Manhourat, had a habit of bombarding these resorts with discharges of stones. The proprietors offered the State 300 hectares of land on which to begin remedial works. Operations begun in 1885 were successful under very adverse conditions. Notwithstanding the dangerous instability of detached rock masses, the foresters succeeded by underpinning the blocks and boulders, and building up a good sod on the bald slopes, in making things safe and permanent. The stone avalanches have ceased.

At Bourg-d'Oisans the dikes, built at great cost to secure the town against the torrent of Saint Antoine, are, thanks to corrective works on the torrent itself, no longer needed. At Fau (Isère) a formerly destructive torrent now flows peaceably within its canalized bed to supply the public fountain.

An inspector of bridges and roads reports: "Thanks to the works of correction, the aspect of the mountains has quickly changed; the soil has acquired such permanency that the violent tempests which have caused such disasters in the Hautes-Alpes have done no harm in the restored areas. The mountain has become productive. Hay is cut where formerly a few sheep could hardly live. There is no more dike-building. Nothing comes down from the mountain. The benefits to valley-lands near the cones of the torrents are immense. The cost of maintaining dikes is lifted, and the land, no longer threatened with floods of detritus, has certain value. Crops are assured. The harvest is certain."

These examples are doubtless selected from the most favorable. It is doubtful if the average result of all the operations effected is nearly so good.

The credits voted for such works have not been large enough for what is needed. Scarcely more has been accomplished than the extinction of the most ruinous of the torrents. Elsewhere, more or less merely provisional work has been done. The replanting has not in all cases succeeded, and large areas of land, of necessity acquired by the State under this law, have not been brought to a productive condition. The trees come on slowly. Many of them die out.

There is much room for betterment in the regulations of the pasturages. In practical working they are too often ineffectual. The mayors do not live up to the spirit of the law in this matter, and the *préfets*, not personally conversant with the lands in question, are apt to approve the projects of regulation without knowing if they are sufficient. Politics are apt to enter largely into these questions. The mayors of communes, who generally own the biggest herds, are not likely to be too strict with themselves.

A comparison of the benefits derived from these works, with the amounts they have cost, is not easy, for their greatest benefit is that of preventing damages, an incalculable factor. Their indirect results, such as agricultural development, safety of communication, arrest of depopulation, etc., are equally difficult to reckon. Demontzey essays an estimate of the value of results arrived at by the extinction of the torrents of Faucon and Bourget in the Barcelonnette, and figures a gain of 1,200,000 francs at a cost of one-half that sum. But such calculations are perhaps somewhat empirical.

M. Girerd, Under-Secretary of State for Agriculture, cites a more remarkable case: "In the district of Remollon (Hautes-Alpes)," he says, "works costing 100,000 francs have preserved from destruction cultures valued at over two millions."

The protection of villages and lands against possible torrential disasters is, however, an item which scarcely permits definitive estimation.

The indemnity for sequestration creates a temptation to wear out lands as rapidly as possible by overstocking them, and thus to urge their need of the *mise en défens*, a plan which easily leads to their being unloaded upon the State at prices beyond their value. The indemnity also is often set at more than the usufruct amounts to.

The people generally can hardly be said to favor reforestation proceedings. Large areas of forbidden land here and there in the mountains rather interfere with moving the herds about. Trespass is sometimes too severely punished. The guards are somewhat too autocratic. There is far too much officialism in the system, as in most things French. There are annoying delays in getting, through the innumerable bureaus, the necessary permits for timber, drop-wood or litter.

A lot of land has been taken over for redemption, for which there is no money at hand. It lies idle, and the capital it represents is unproductive. This kind of thing is not calculated to please the thrifty French. The Administration is unpopular because of all these things. There are not wanting critics who, looking at the results as a whole, do not find them brilliant, considering that they represent thirty-five years of effort and an outlay of 70,000,000 francs.

It is certainly true that the regeneration of the mountain-lands has not as yet been fully accomplished. The mountainous lands of France have been for more than a generation, say for the last third of this century, suffering from the effects of gradual depopulation. The advocates of reforestation hoped to see this evil checked by that means. It has not been so. Depopulation continues, has even been augmented.

The chief cause of the emigration of mountain peoples is to be looked for in the changed economic conditions which the century has everywhere developed, the decreased value of lands, the diminished purchasing power of money, the increased cost and scarcity of labor. Reforestation has as yet in general only decreased the revenues and increased the costs of the communes.

Sequestration suspends the right to alienate forest lands and lays new burdens upon their proprietors. The forest, falling under the *régime* of the Administration, must be provided with guards at the expense of the communes. The case of one commune in the Pyrenees has been cited which receives 348 francs of yearly revenue from its timber land, and pays 240 francs for its care. In the Alps some forests cost four or five hundred per cent for maintenance. In the little communes of Savoy the average cost is 200 francs to 100 francs of revenue.

Where governmental operations are begun, the expense increases as the revenues diminish. The communes can no longer lease their pastures. Other sources of revenue are cut off. Expropriation, interdiction and regulation have crippled the grazing industry so much that the Chambers have considered a direct compensation on this account to the pastoral communities. The people do not submit quietly to these changes in the old order. The year's docket in the Alps shows about one thousand cases of infringement tried. The extent to which expropriation by the State for purposes of reforestry may be pushed might be instanced by the case of Chaudron, an extreme one, indeed, where the whole property of the 120 inhabitants of the place being taken over *en bloc*, they were forced to emigrate in a body to Algeria, where a concession was granted them.

Of course this state of things is temporary, but it shows, after all, how very difficult it is to frame a law for the general economic welfare which may not in some places work hardships. A. B. Bibb.

[To be continued.]

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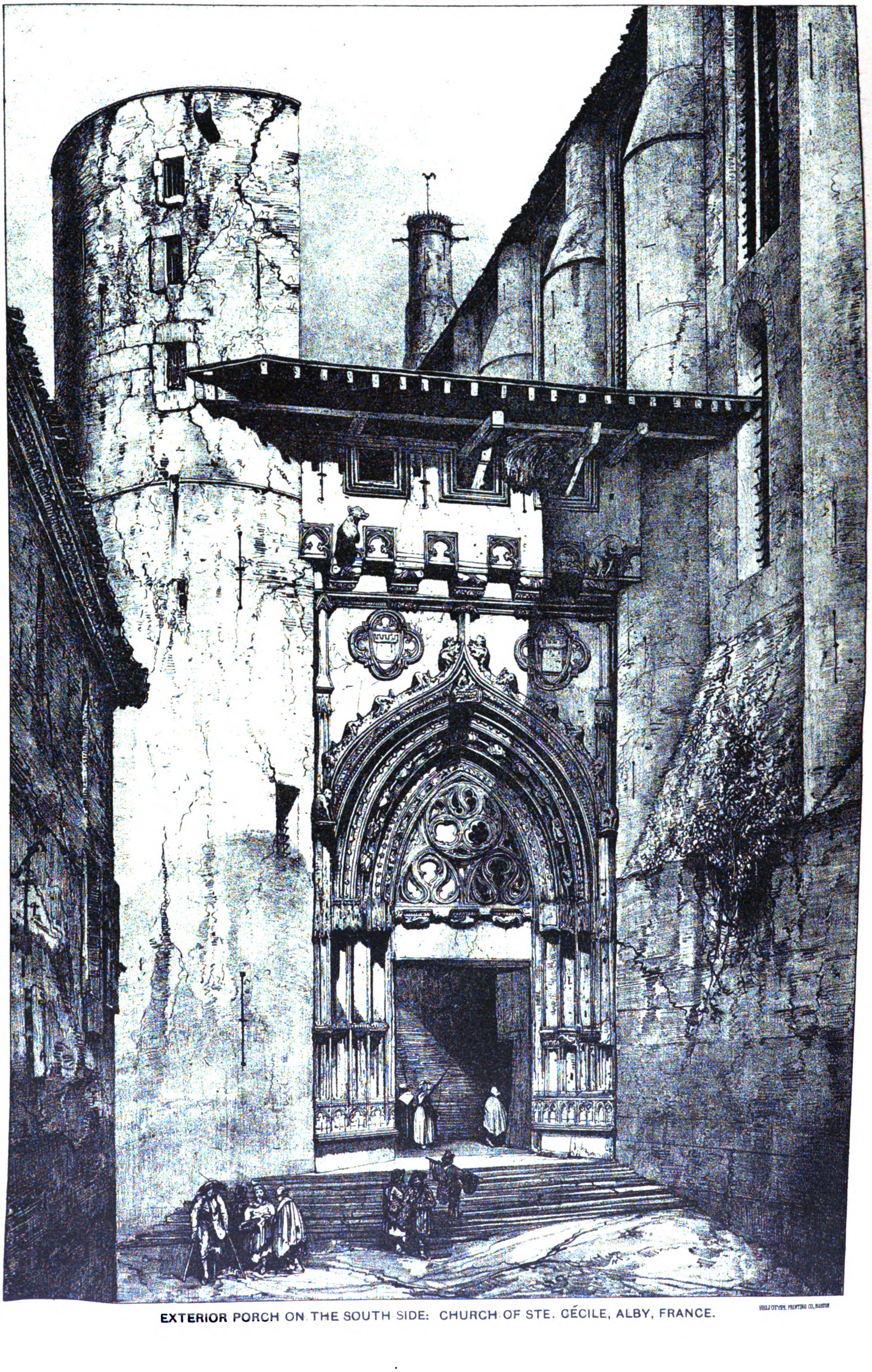

EXTERIOR PORCH ON THE SOUTH SIDE: CHURCH OF STE. CÉCILE, ALBY, FRANCE.

HELIOTYPE PRINTING CO., BOSTON

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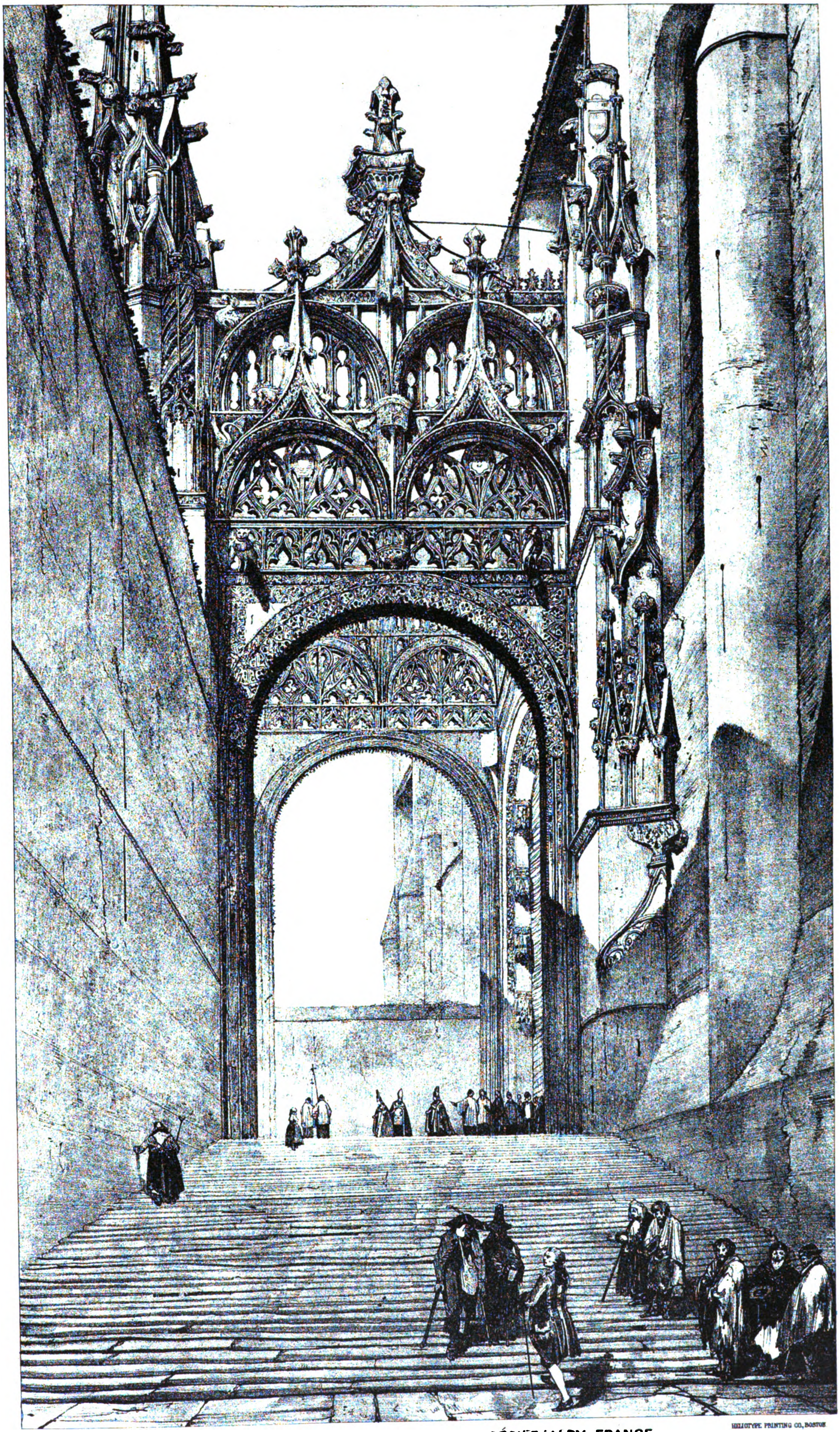

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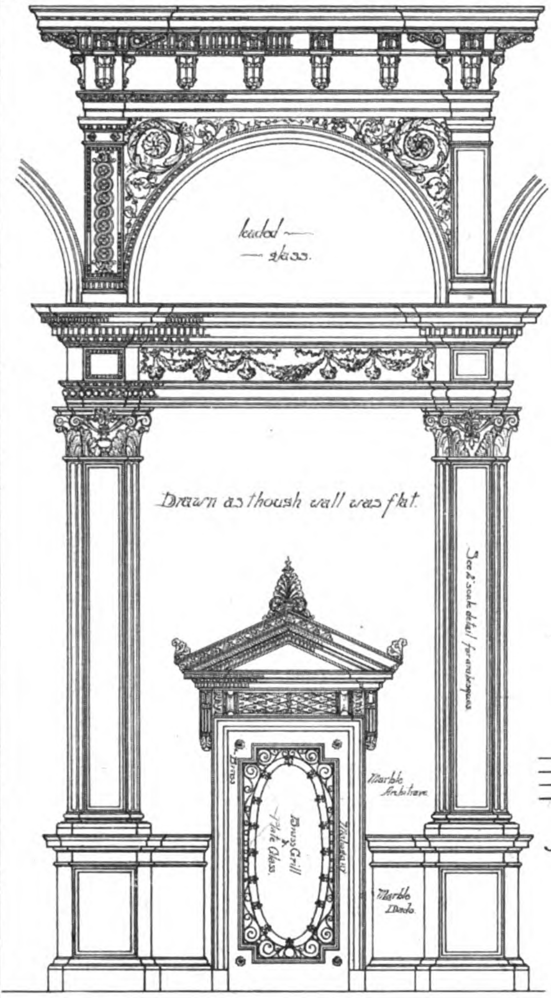
leaded
glass.
Drawn as though wall was flat.
See ½ scale detail for arabesques
Brass
Brass Grill & Plate Glass.
Mahogany
Marble Architrave
Marble Dado.

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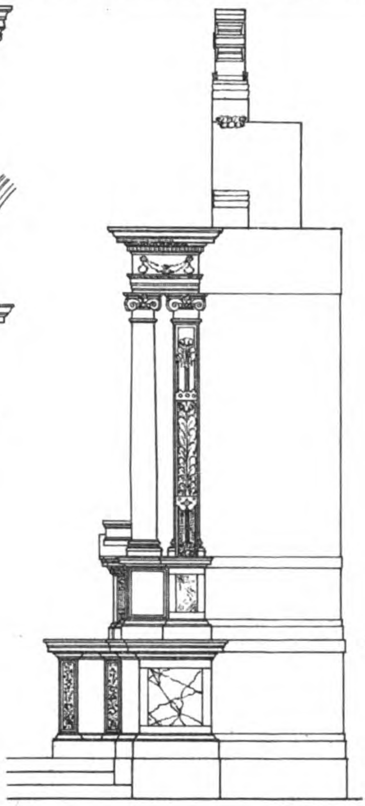

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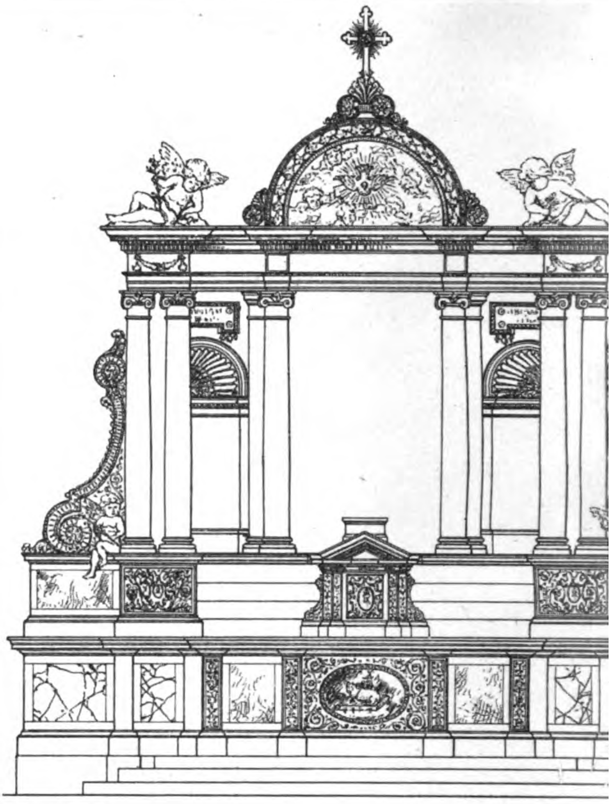
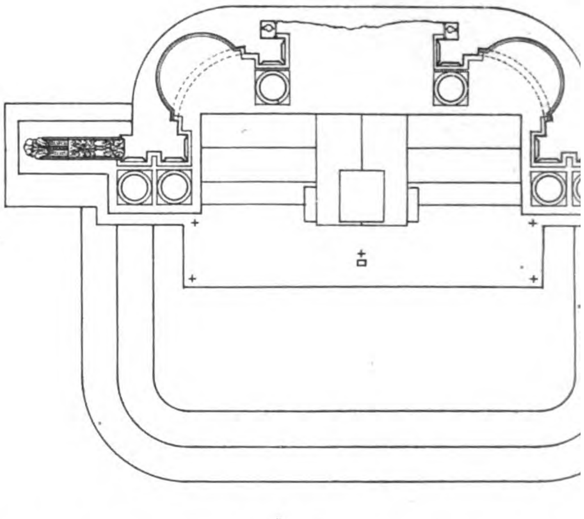
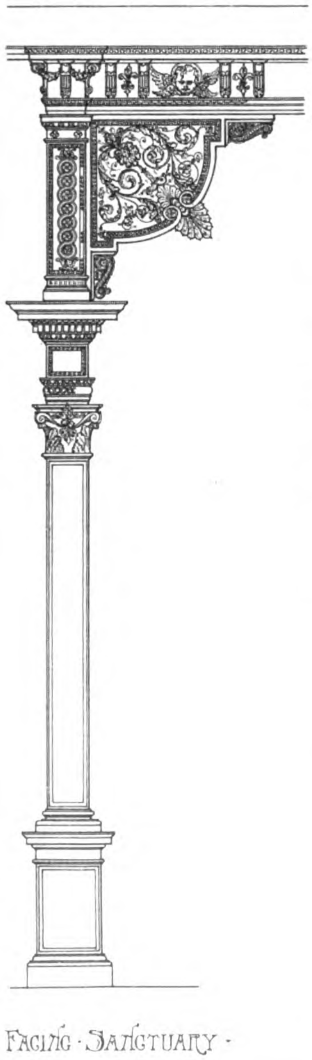


~ FRONT · ELEVATION ~





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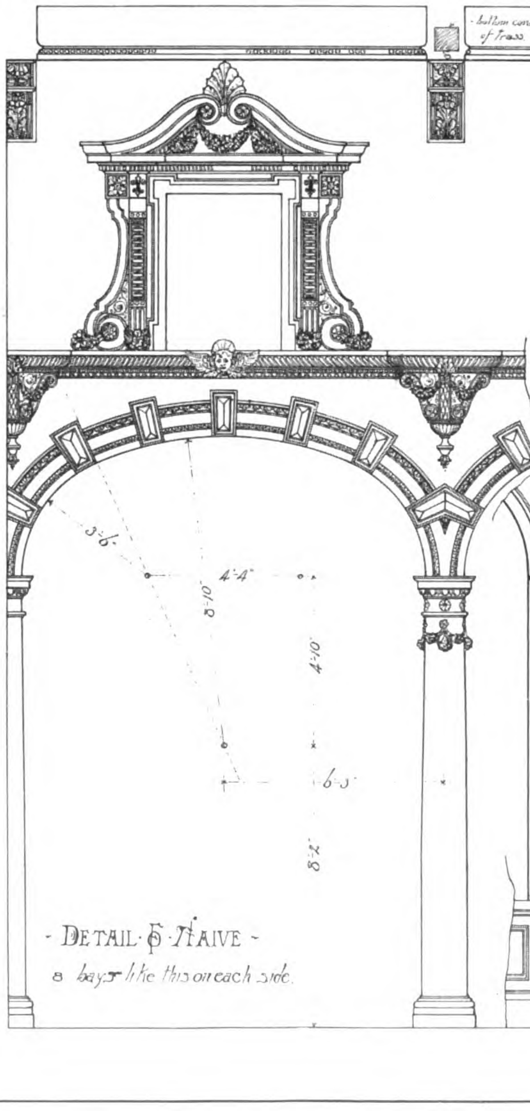

- DETAIL · OF · NAVE -

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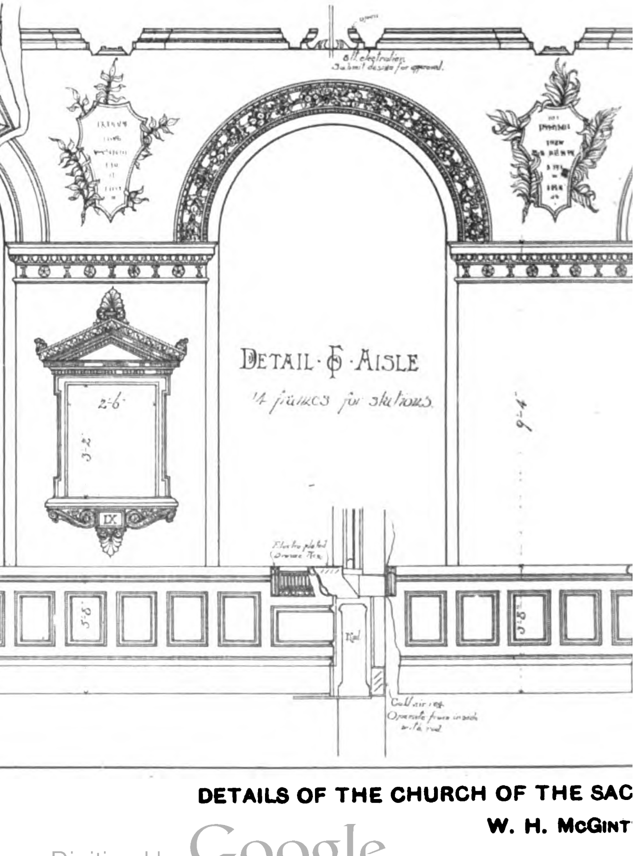
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DETAIL · OF · AISLE

14 frames for stations.

DETAILS OF THE CHURCH OF THE SAC

W. H. McGINT

ILDING NEWS, MAR. 31, 1900. No. 1266.

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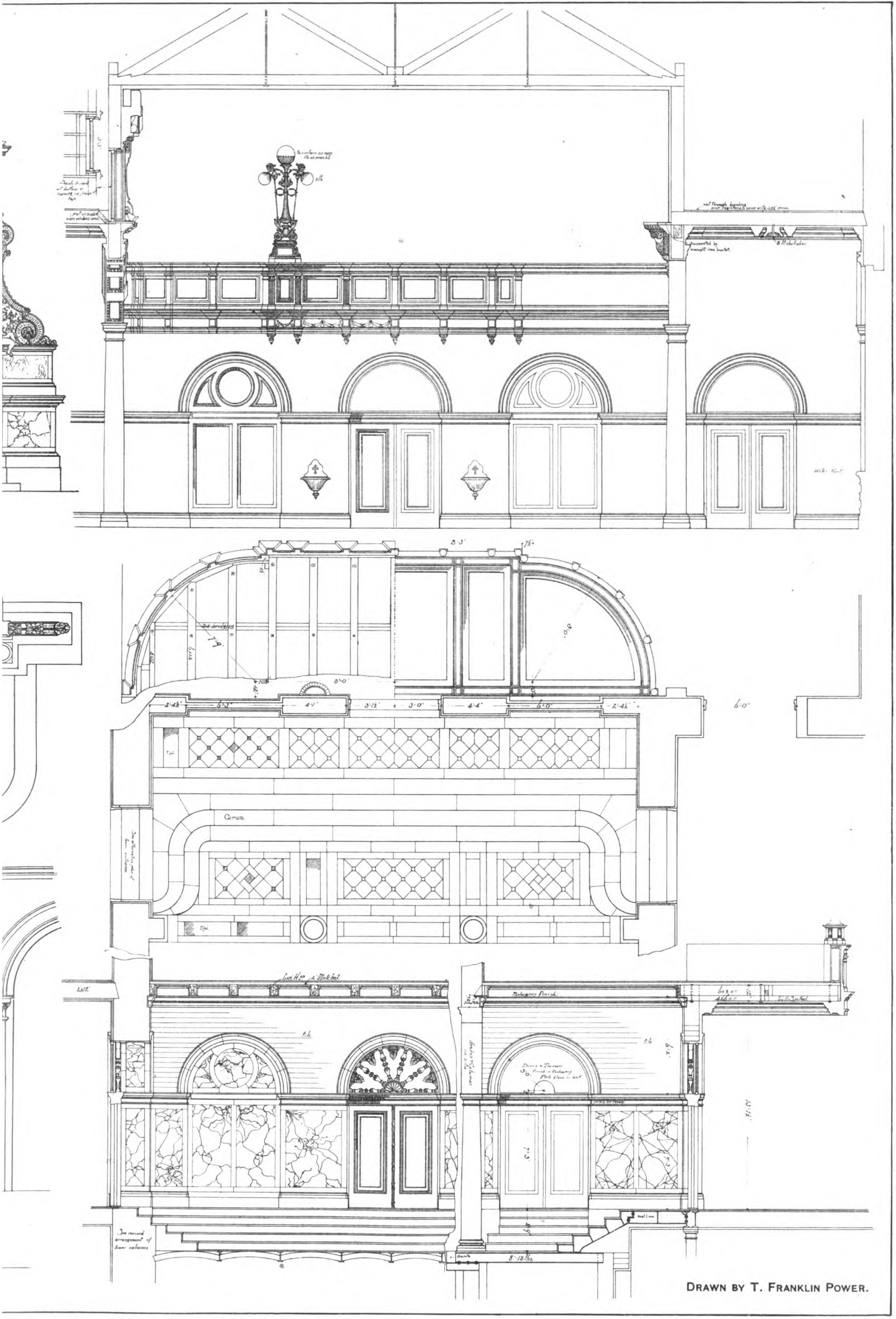

DRAWN BY T. FRANKLIN POWER.

HELIOTYPE PRINTING CO., BOSTON

ED HEART, NEWTON CENTRE, MASS.

, ARCHITECT.

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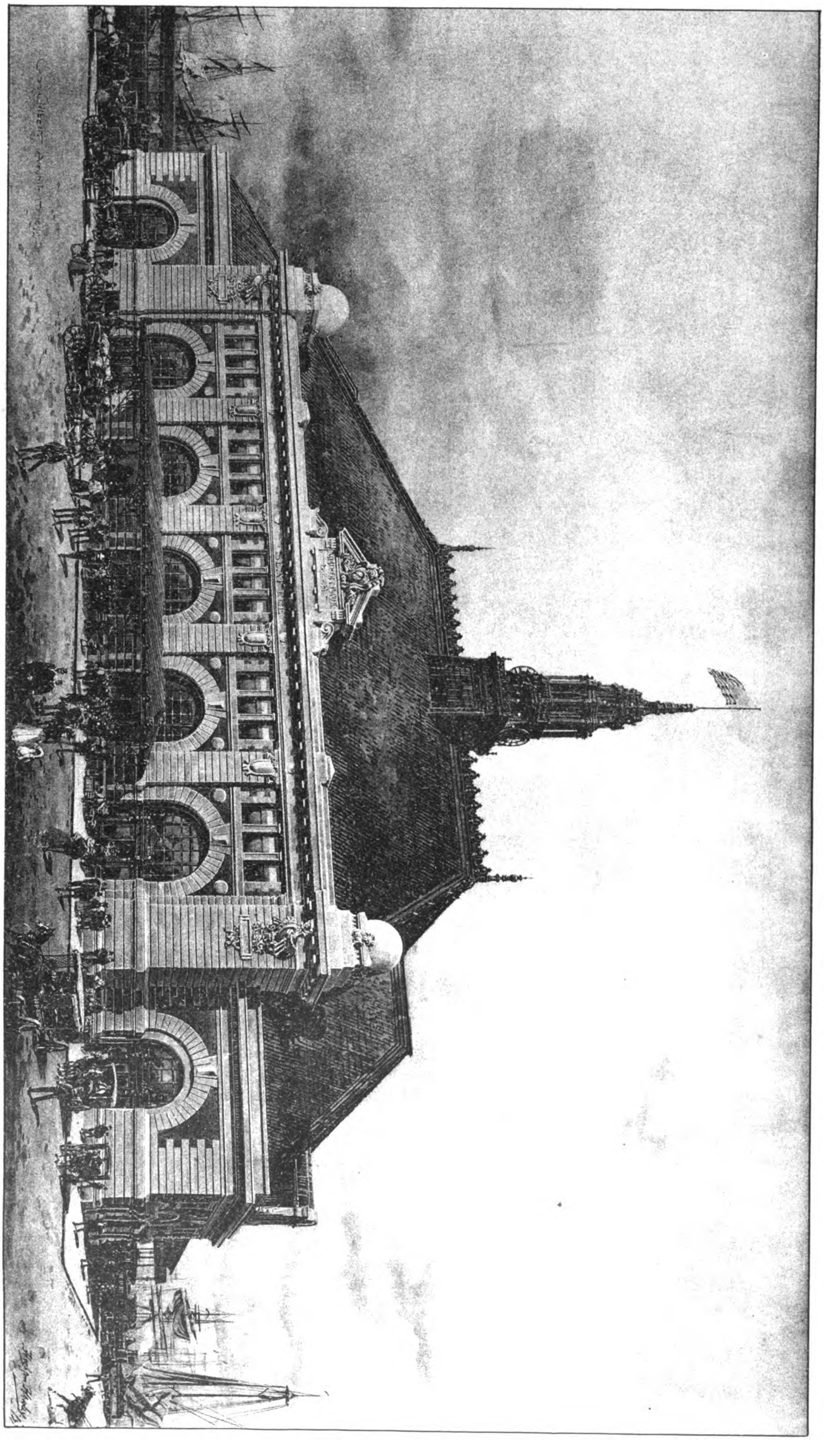

DEPOT AT SEATTLE, WASHINGTON.
FOR THE NORTHERN PACIFIC RAILWAY COMPY.
CASS GILBERT. ARCHITECT

HELIOTYPE PRINTING CO. BOSTON

AMERICAN ARCHITECT AND BUILDING NEWS, MAR. 31, 1900. No. 1266.

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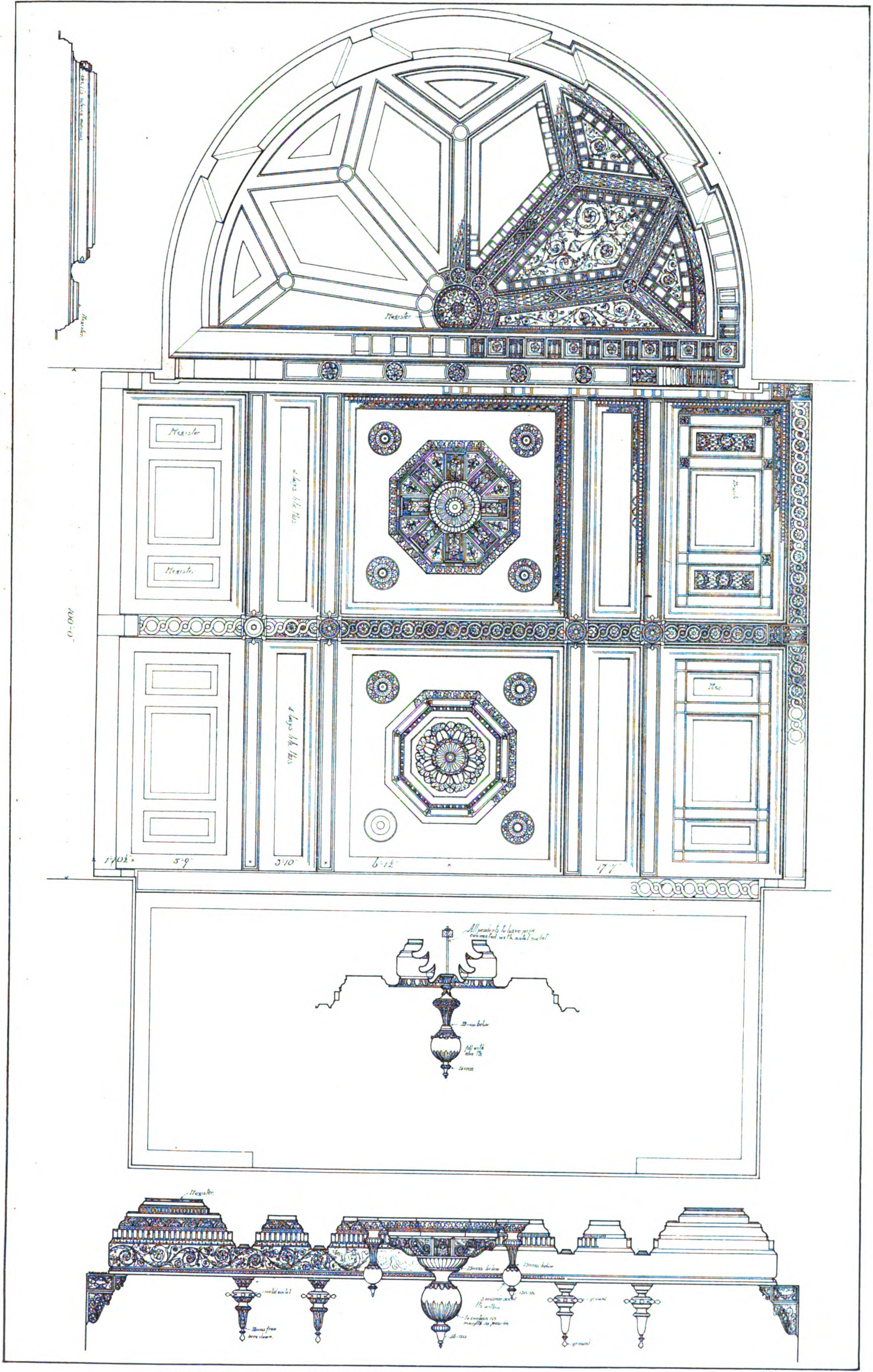

HELIOTYPE PRINTING CO., BOSTON

COFFERED CEILING: CHURCH OF THE SACRED HEART, NEWTON CENTRE, MASS.

W. H. McGINTY, ARCHITECT.

DRAWN BY T. FRANKLIN POWER.

LICENSING OF ARCHITECTS.

CINCINNATI, O., March 3, 1900.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — A bill has been introduced in the Ohio State Legislature providing for the licensing of architects. The Cincinnati Chapter of the Institute is almost unanimously opposed to legislation on this subject, and have adopted the following resolution, viz: —

"That a law to license architects is not desirable or expedient, nor for the best interests of the public or the profession."

This resolution has been endorsed by practically one-half of the architects throughout the State, and we think that if we could get an actual expression from such architects as are usually indifferent to all such questions, or else too timid to express themselves, there would remain but a comparatively small minority in favor of the license law. There is a determined effort, however, being made to have this bill passed, and if this move should be successful, it is likely to stir up similar agitation in other States. We feel that this is all wrong, and that there is not sufficient cause to justify such a law, and in order to avoid the danger of ill-considered action on the part of others, we send you herewith two papers,[1] written by Samuel Hannaford (one of our oldest members), in which he ably presents the arguments against such legislation. We cannot but wonder how any one who will study these arguments with the care which they merit could possibly do otherwise than endorse the resolution of our Chapter.

We think that it is proper that the profession should be fully informed on this question, and hope, therefore, that you will be able to give these papers proper space in your valued journal.

Yours very truly,

A. O. ELZNER, *President, Cincinnati Chapter, A. I. A.*

February 1, 1900.

TO THE MEMBERS OF THE ARCHITECTURAL PROFESSION IN THE STATE OF OHIO. GREETING AND GOOD FELLOWSHIP: —

THE time seems propitious in the minds of many members of our profession that some measure of protection should be afforded the competent and reputable members from the interference of persons who are not architects, or if so claiming, are not entitled to be so classed because of their incompetency and ignorance of the art; hence, as an easy, and as some believe a sure, remedy, they turn to legislative enactments that shall forbid such competition. The members of the Cincinnati Chapter of the American Institute of Architects have suffered from such unfair competition equally with yourselves and earnestly desire a better state of affairs. They have, in company with other members of the profession who are not members of the Institute, carefully considered the subject and earnestly discussed the many reasons advanced by advocates of a license law, and have come to the conclusion that the passage of such a law, which provides for the appointment of an examining board by the State, who shall determine the fitness of candidates for the profession — is unwise — not called for by the public and not to the best interests of the profession.

While perhaps a casual view of the question might lead to an opinion favoring such a law, the Cincinnati Chapter, A. I. A., believe that a more careful examination will result in a different conclusion; hence, they desire to submit to your judgment the following thoughts and arguments bearing upon the subject: —

In all the discussions of the needs of the profession and the public, the advocates of a license law invariably state that they believe that it will be a great help to the profession and that without it the status of the profession cannot be raised or bettered. This statement of an opinion in which "the wish is father to the thought" is not an argument or a statement that appeals to one's reason, and is fully answered by stating that *we* do not believe that it will be a help to the profession, neither do we think that the status of architecture will be raised or bettered by it.

The only reason advanced in favor of a license law is that it is necessary to protect the public from incompetent practitioners.

In the consideration of this argument, it may be well to state that there are two channels of possible detriment to public interests in this matter. *First.* — Bad construction, that imperils the safety of the public. This is possible and does sometimes happen, but it rarely happens as the result of lack of knowledge, but generally is directly traceable to rascally work, to work executed by men who are unscrupulous and who are not moved by any considerations of conscientious relation to their work.

Sometimes accidents occur which are disastrous, but these are nearly always due to carelessness and are not the result of ignorance. While admitting the possibility of danger and damage in these instances, we maintain that they are absolutely outside the remedial or preventive scheme proposed in a license law. No examination, be it ever so rigid, can make a dishonest man honest or prevent occasional accidents occuring.

The *second* possibility is along the line of bad sanitary conditions. That such bad conditions exist is true, but in justice to the profession we state that in 99 cases in every 100 they are not chargeable to architects, but that they occur in work done by parties who have not engaged the services of an architect, and their parsimony and ignorance are the offenders. But this necessity of decent living is already covered and provided for by the regulations governing plumbing, etc., in our cities, where most needed, and if existing laws are obeyed and honest men are engaged, honest work will result. If additional protection along this line be needed, the laws at present in force in some parts may readily be extended to embrace the entire State.

In concluding the examination of the validity of the claim that the public should be protected from incompetent service, we maintain that in the past and at present a person desiring the services of an architect can exercise his best judgment in the selection, and is in nowise obligated to put his material interests in jeopardy by engaging the services of any but one whose reputation and character are a guaranty that he will be well served.

We would further suggest to you that in the case of malpractice, the safeguards of the common law are still in force in all their integrity, and we are liable to our employers for any damage they may sustain resulting from lack of skill or carelessness on our part. This common-law responsibility of man to man has been in the past, is now, and ever will be, the potential protection of the interests of the public.

In conclusion, we would remind you that the public have never, at any time, or in any place, demanded such protection, and it is not a strained or unfair conclusion to believe that they have never needed it.

In regard to allusions constantly made to the professions of Law and Medicine, and drawing a parallel between them and Architecture, and assuming that the proposed method of the examination and licensing architects is identical with the methods imposed upon Law and Medicine, we are of the opinion that the parallel does not hold.

First, there is no analogy between the relative familiarity of the doctor and his patient and the architect and his client. For ignorance on the part of a doctor in giving a wrong prescription may result in death, death so swift and sure that it is impossible to prevent it. Hence, so real is this danger that the exercise of the functions of the medical profession have been rightly hedged around by all possible safeguards in every civilized community. Now, it is clear to all that the relative position of the architect to the health, the life and the death of his client is not so close as that of the doctor — the very proposition is an absurdity.

The parallelism of the architect and the lawyer to their relative duties is not so marked as that one can be used to illustrate the other. The lawyer must interpret the laws of his country in accordance with fixed principles and forms, and his knowledge of such laws must be determined. He cannot be allowed to use them, interpret, or apply them according to his own sweet will and fancy. Such looseness would turn every court in the land into a mere pandemonium of sound, idle and windy harangues, equally as destitute of law as of common-sense. Hence, an examination of candidates for the legal profession is eminently proper, and the law takes cognizance of such.

In addition to the differences in the relative position of architects to their clients and doctors to their patients, which differences vitiate the parallelism desired to be established by advocates of a license law, we would remind you that candidates for the medical profession are not examined by a board appointed by the State, as proposed in the law to license architects, but are educated in colleges under the patronage of the several medical bodies of the country, and having passed a satisfactory examination are given a diploma and are eligible to practice. All that the State does is to require their registration and to show their diplomas as evidence of their fitness.

In this case, therefore, the profession determines what proficiency is requisite in a candidate — not a State Board — and the profession determines their fitness and determines the method and manner of their entry to its domain. Thus the character and fitness of a candidate is determined, and the honor and high standing of the profession is maintained. The method of admission to the medical fraternity is within themselves and is absolutely free from any taint of political influences or jobbery, which in spite of denials, and even facts to the contrary, would to a great extent nullify the value of a license based upon a State examination.

You are doubtless aware that the subject of the advisability of licensing architects has been before the profession in other countries, as England, France and Germany, for many years, and the subject has been well considered and earnestly debated. The general consensus of opinion has been adverse.

The Royal Institute of British Architects, the largest and by far the most influential representative body in England, has always opposed it. It has always been opposed by the great body of the profession in France and Germany. Indeed, it is a true statement that there is not a civilized country in Europe that has any such license law as that proposed in our State.

It may not be amiss to quote the opinions on record of those eminently qualified to speak on this subject. It is well to note that the underlying selfishness of the movement is as plainly apparent in France as in this country, if we are to judge by the remarks quoted.

Not long since M. Planat, in a contribution to a French journal discussing the several diplomas granted there, especially in connection with the School of Fine-Arts, Paris, says: "The profession of architecture should not be limited, even though many practising architects favor it, because it would be advantageous to them to exclude the greatest possible number of competitors. No one thinks of reducing the number of painters, sculptors and literary men, or even to impose examinations and competitions on the debut of their careers; in fact, every profession which is at the service of the public is free.

"There is an exception in the medical profession, but it is rightfully so, as medicine in the hands of an incompetent man is one of the most dangerous professions. A wrong prescription might result in death, and in this matter the State has only sought to defend the interests of the public, and not that of the doctors. Can any one say that the free exercise of architecture is equally a public danger? This would truly be exaggerated. A badly-planned building or badly-studied façade does not necessarily occasion any one's death. There may be a certain inconvenience in employing an unskilled architect, but rarely a grave danger."

This quotation is lengthy, but it shows the drift of the controversy in France. So, also, M. Mulle, Professor of Legislation at the Ecole des Beaux-Arts, Paris, in an article discussing the advisability of a license law for architects, and the relative position of lawyers and doctors, for whom a diploma was enacted, says: —

"It is especially the public interest that is taken into account and not the interest of either profession. Complaints do not come from the public, but from the architects, and it is solely in the interest of the profession that this exclusive privilege is demanded."

---

[1] See also Mr. Hannaford's paper in the *American Architect* for February 4, 1899.

These two writers go fully to the root of the matter in their opinions, that it is the selfishness of the profession that demands this exceptional legislation and not the demand of the public for protection.

In England the passage of a license law has been consistently opposed by the leading minds in the profession, as R. Norman Shaw, Alfred Waterhouse, T. Roger Smith, T. G. Jackson, Ernest Newton and many others, as well as by the Institute of British Architects. Dr. Rowand Anderson, the late President of the Edinburgh Architectural Association. in a Presidential Address, laid down some of the duties of the medical, legal and clerical professions relative to the public, and stated that the public dealt with the architect on a totally different footing. "The architect was but the interpreter of the public idea of art at any given time, and had to give what the public wanted and was prepared to pay, for. No compulsory law or diploma could alter this. The law could not, or would not, protect the public from bad art, because the public could, and must, at all times protect itself."

But what can be done to elevate the profession and render it more efficient as an handmaid of our progressive civilization? This question demands our most serious consideration. Not that we think our profession a laggard in the onward and upward march to the starry ideals of the future, but we must be fully furnished and fully equipped for all the demands that may be made upon us. A profession that fails to discern its own future, that is not eager to meet all demands, is lacking in the virility in which the world delights, as an assurance that we are within call and prepared to respond to all the mighty wants and purposes of the future.

One thing is certain, what we may have known, and what we now know, will not suffice for the future, hence we must by earnest effort prepare for the coming demands.

We need not remind you that the American Institute of Architects — now in its forty-fourth year of usefulness and influence — has prepared a liberal course of study and instituted an examination, and in passing said examination in the future, or upon receiving a diploma from a recognized school of architecture, candidates may become Fellows of the Institute.

That this will result in fitting men for the exercise of all the functions of the profession none can doubt. The R. I. B. A. of England inaugurated the same general scheme several years ago, and it has worked admirably. There can be no reasonable doubt of its beneficent effect on the profession, as far as mental fitness and proficiency are concerned, but in addition to this we must exercise the functions of our profession in an honorable and righteous manner among ourselves and in all our relations with the world, and when the decision of an architect is synonymous with equity, who can doubt but that the profession will be held in honor and respect. To doubt such a consummation is to deny the very foundation principles of righteous living.

The uplifting of the profession must be in the nature of an evolution from within. A State license is weak and impotent for this purpose, and every effort to attain this desirable end that comes from without will be equally so.

For these and many other good and sufficient reasons we are decidedly of the opinion that the passage of a license law is unwise; that if passed it would be inefficient and fail of its intended and desired purpose, and that it is not to the best interests of the profession to restrict its free exercise by the interference of any legislative enactments whatever.

We believe that it should be within the province of the profession itself to determine the measure of fitness and attainment that shall render a candidate eligible to the Fellowship of the profession, being confident that through the method inaugurated by the American Institute of Architects, the usefulness, honor and dignity of the profession will be advanced and maintained. Samuel Hannaford.

February 16, 1900.

In a paper addressed to the members of the architectural profession in the State of Ohio, some time since, the arguments advanced were those that mainly concerned the relation of the profession to the public.

There are, however, other considerations — deeper because more philosophic considerations — that appeal more intimately to the profession alone, because based upon our nature and existence as a profession.

Let us consider what we are, and why we exist.

Let us determine what architecture is. Is architecture a science or an art? Is an architect an artist or a builder? Now, we hear of several kinds of art — of the Fine-Arts and of the Industrial Arts. Art, broadly considered, is acquired skill, the power to do something not taught by nature or instinct, the application of knowledge or power to practical purposes. A man that pursues the Industrial Arts is an artisan — a workman. A man that pursues the Fine-Arts is an artist, and the product of his skill is an object of beauty, an object that gives pleasure by the impressions it makes upon the mind, an object that excites the taste and imagination.

An artisan labors with his hands, labors in the sweat of his brow; the product of his labor is the result of the exercise of brawn and brain, perhaps more of the former than the latter. The object may be useful; it may be or may not be pleasing. When brain — meditation and imagination — dominate the production which must be an object of beauty, then he who labors is an artist.

A portrait-painter is an artist.

A sign-painter is an artisan.

We maintain that architecture is a Fine-Art. We maintain, also, that it is a science. When the two are combined, and it becomes the lifework of a man, and is used for the advantage of others, and he, in return, is compensated, then it is a profession.

We declare, then, that architecture is something more than a Fine-Art; it is something more than science. It is a combination, and to determine which element is the more important is a serious consideration, for it is to determine the relative importance of knowledge of what to do — and the knowledge of how to do it. We hold the former is by far the more important. It is, indeed, the line of demarcation between the draughtsman and the architect, between the architect and the builder.

The architect must have trained skill, and, in addition, be able to call into action faculties that are largely in the realms of the imagination. At the very outset of his consideration of a problem, he must have a prophetic vision, so that in his work he can see the end from the beginning. Can you measure this, either in quantity or quality, by examination, that you may license its exercise?

We maintain that this ability to use his imagination, to call into exercise his artistic perceptions — which are largely the result of educated discriminations — is of the utmost importance in the proper execution of the duties of his profession. He must see, as we have said, the end from the beginning. He must also see the several steps that lead to the end. It is his artistic perception that reveals to him the completed thing of beauty, and, through his scientific knowledge, he can crystallize his vision into reality. In this division of labor, we maintain that the former, in a large majority of cases, is of the greater importance to his client, for generally the constructional problems involved are so ordinary, so simple and oft-repeated, that it may be said they build themselves.

Now, one of the first problems that confronts the architect is to determine the proper location of the structure upon the site — if it be an isolated building.

It is his artistic perception that tells him where he can so place it that it will affiliate with and harmonize all the natural advantages of its environment, that, when built, it will command all the beauties of the far-off hills and plains, that such outlooks may be the heritage of its occupants for all time. Can you plant this instinct in him, or find it out and develop it by legal examination?

It is the artistic perception also that enables him to select the proper material, both in color and texture, that will insure beauty to the building, that will blend and harmonize from turret to foundation-stone. Can you determine the measure of a man's art-soul by the proposed examination?

It is his artistic perception again that tells him how the crude material, the stone, the brick and timber, should take final shape in beauty. Can you, through legalities, find out how capable he may be in this?

It is his artistic perception, too, that tells him how his roof shall not only exclude the rains and snows, but that it can be a thing of beauty, and thus the sky-line of his structure nobly crown the whole. Does this faculty respond to the proposed legal inquisition?

Then, too, it is not enough that there are windows to admit light; but it is his artistic perception that tells him how they will group beautifully, and how to bring about a proper balance of void and mass in the wall, and what width and height will give them pleasing proportions. Can you, by legal searching, find out this?

Again, it is his artistic perception that tells him how to arrange the relative locations of the several apartments, that they may combine and connect in a pleasing and dignified manner. It is not sufficient that there are the required number of rooms, but they should be so adjusted that they take advantage of the beauties of the site — the right room should be in the right place. For instance, a family library should open to the most pleasant view possible, while a pantry only needs light. Do you hope to determine the possession of this ability by legal examination?

So also, it is his artistic perception — the prophetic vision only — that shows him how these units shall make a whole, that in symmetrical and harmonious unison will be, as a creation, "a thing of beauty and a joy forever." Can you, by a legal examination, determine the possession of, and ability to use, these faculties in a candidate for the profession of architecture? Absolutely no. It would be quite as reasonable to attempt to determine the ability of the artist by an examination of his ability to mix and grind his colors.

Some may make light of these considerations, and declare them fanciful — mere matters of taste, in nowise essential, etc. We assert the exact opposite — that they are absolutely essential, that they are foundation principles that mark the difference between the artist and the artisan, between the architect and the builder. It is because the public believe that we are in possession of these artistic faculties that we exist as a profession. Belittle them and you belittle the profession. Take them away and the architect becomes a builder. Hence, we maintain that the artistic element in our profession is of paramount importance, and that by undue exaltation of the science of construction, architecture becomes a lost art, architects become extinct, and the engineer takes possession.

Hence, we insist that it is impossible to examine a candidate on the measure of artistic perceptions; that only the knowledge of the lesser element, the mere knowledge of how to build, can be examined, and that a very large majority of the constructional problems that the architect is called to solve are so simple, so elementary and so oft-repeated, that, as before said, the houses build themselves.

Nevertheless, we do not oppose education along constructional lines, but protest that to-day this is not the great need of the profession, but rather it is education in art that is needed, and that this will be best attained by the carrying out and putting in practice the course of study mapped out by the American Institute of Architects, and making it a condition precedent to admission to the A. I. A., that the candidate must pass the examination thereby prescribed.

We are talking now on inner lines of thought — lines that are *sub rosa* to the profession because they concern our own immediate welfare only. Hence, let us consider the effect of the measures of the proposed license law on the future standing and influence of the American Institute of Architects. We do not suppose that any of us think lightly of the Institute, although we may not all be members of it, or that we would knowingly do aught that would lessen its influence, or belittle it in the estimation of the public at large, or the profession. We make bold to say that its influence on the profession and the public has been good, that it is growing, and that never before has it been so much a power for good as now.

It is very evident, inasmuch as the A. I. A. is the central and representative body, that whatever tends to build it up, to enlarge its power and extend its usefulness, has the same reflex effect on the profession at large. It is not claiming too much for the A. I. A. to say that now, to be an acceptable member of it, is an honor and an assurance to the public that their interests are safe when committed to the care and confidence of a Fellow of the A. I. A. This truth is recognized on every hand, and the Institute is fast gaining additional respect as it enlarges in numbers and influence.

Now, any power or influence that comes between this central and representative body and the profession will tend to lessen its influence, and render nugatory its opinions and regulations, and in general minimize its power for good. And if this belittling of the Institute shall be from within the profession the effect will be to powerfully detract from its influence with the public. We, therefore, believe that the A. I. A. should be the body to dictate as to who are fit for membership within the profession, and to prescribe what educational attainments, what elements of character, are requisite in every candidate for admission. To take away this prerogative, or to open some other door of admission, will be to pour contempt upon the profession at large and its central representative body. It is a declaration that the profession cares not — dares not — maintain its own honor and dignity. The Code of Ethics for the profession established by the Institute is of the highest, and it has now established an educational course and final examination which are made conditions precedent to Fellowship in the Institute. Let this proposed course and method of admission be followed; let the profession at large sustain it in good faith, and this uplift from within will soon be felt in all its beneficence, and the time will soon come when the honor and well-deserved high-standing and dignity of the profession will be fully recognized. State interference will be hurtful to the Institute, and thus hurtful to the profession.

I need not mention how little respect there is abroad in the land for anything that emanates from, or is in any wise connected with politics. "The trail of the serpent is over it all." Yet there is a sort of superstition abroad in the minds of men that a legal examination brings about an equality that makes all equal in value as advisers in special arts, etc., and that thenceforward it is mainly a question of procuring needed services at the lowest price.

Doubtless, you may have noticed the effect of our building law in this respect. There are many that believe that because of its restraints and provisions, individual skill and knowledge on the part of the architect are less necessary than formerly. Follow out this line of thought in connection with a license law and you will see how surely a license law will become a leveller — not up, but down.

We have not mentioned the influence or effect of the law in detecting those reprehensible characters who give evidence of moral obliquity; for it is ridiculous to suppose that any such consummation will follow. A candidate may be absolutely devoid of moral character, pass a brilliant examination and obtain his license, and yet be as unclean as a leper of old.

In conclusion, allow us to say that we state nothing you do not know when we say that the whole movement had its inception, and has its present vitality, in the selfish desire on the part of those already in the profession to keep others out. It is a selfish attempt, supported and reinforced by a selfish hope that business competition may be lessened.

The public are free to act; their judgments are not forced; they need not engage the services of others than true and tried practitioners; and it is fair to say that the same amount of business judgment that enables a man to safely attend to the general material interests of life — the ordinary sagacity that enables a man to purchase sweet butter instead of rancid — will be sufficient to safeguard all his building ventures; hence, we fail in any way to recognize the necessity of a license law.

SAMUEL HANNAFORD.

THE ILLUSTRATIONS

[*Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.*]

DEPOT FOR THE NORTHERN PACIFIC RAILWAY, SEATTLE, WASH. MR. CASS GILBERT, ARCHITECT, ST. PAUL, MINN.

THE GRAND PORCH OF THE CHURCH OF STE. CECILE, ALBI, FRANCE.

ALTHOUGH this and the next plate are copied from Baron Taylor's "*Voyages Pittoresques*," the following description of these unusual porches is taken from a recent issue of the *Churchman*: On approaching the entrance of the church, a most elaborate porch, extending over six bays of the southern wall, we seem to be entering another region of art altogether. The Porte-Dominique-de-Florence is the most splendid entrance to a church which I have hitherto seen in France. A crenellated tower of brick at one corner of it is the sole feature that harmonizes with the material of the rest of the church. The main porch is all stone. Yet an attempt has been made to make the idea of a fortress predominant even in this gorgeous example of fourteenth-century Gothic. The crenellated valance, with machicolations beneath its projections, is indeed adorned with Gothic mouldings and their warlike aspect softened by quatrefoils and floriated brackets. The portal is named after the prelate who built it during the two periods, 1379–1382 and 1397–1410, in which he occupied the see.

The church at Albi is one of the few in France which are dedicated to St. Cecilia, the patron of Music, and of the Fine-Arts generally. It is natural, therefore, to find in the tympanum of the arch at the eastern entrance of this porch a bas-relief representing that saint crowned by angels. At the right hand of St. Cecilia stand the patron saints of the town, St. Mary Magdalene, St. Salvi and St. Clair; at her left is St. Dominic, presenting Dominique-de-Florence to St. Cecilia; the other figures are those of St. Louis, Bishop of Tours, seated on a throne, a canon kneeling in prayer, and St. Bernard. Beneath these statues appear St. James the Great, Thomas Aquinas, with a sun upon his breast, signifying that he was the intellectual light of his age, St. John the Evangelist, and minor local saints. Above the archway are the arms of Dominique-de-Florence.

From this outer portal we mount two flights of some forty steps in all, which bring us to the actual doorway, whose threshold is on a level with the nave of the church. The platform on which we then stand is canopied with a marvellous structure of sculptured stone. At each of its angles a pillar which meet at the centre of the vaulted roof. The flamboyant style never produced so wonderful a masterpiece, not even in the vestibule of the great hall at Christ Church, Oxford. It seems like a sort of triumphal arch. It is intended, perhaps, more than anything else to perpetuate the name and glory of local prelates and saints. Albi, ecclesiastically, is not only original, but it is patriotic in a local sense. The arms of its bishops adorn this porch, while the six statues of saints which are niched there at the four points of the compass are all Albigenses. These names may be obscure, but Albi will neither forget nor suffer to be forgotten Salvi and Carissimus, Amalandus, Sigoleuns, Eugenius and Martianne. They are ranged in front of a doorway into the church, surmounted by a tympanum filled with highly-wrought, decorated tracery. This doorway is the principal entrance. The voussoirs are occupied by twelve angels, who bear the instruments of the Passion. Below are the statues of St. Joseph, St. Anne, St. Peter and St. Paul, and again the local spirit of the place crops up, for among the hierarchies are placed the patrons of the four principal churches of the diocese, St. Benedict, St. Michael, St. Alain and St. Mary Magdalene. This certainly embodies an idea which illustrates well the ancient conception of a cathedral, which was, that it should be the mother church and should comprise within its memorials a recognition of all the churches over which its bishop presided.

There is only one more portal to the church. This is placed just west of the sacristy, and opens upon the third bay of the choir ambulatory.

EXTERIOR OF PORCH OF STE. CECILE, ALBI, FRANCE.

DETAILS OF INSIDE FINISH: CHURCH OF THE SACRED HEART, NEWTON CENTRE, MASS. MR. W. H. MCGINTY, ARCHITECT, BOSTON, MASS.

THE problem presented was that in which the architect had to finish a church already built, with a most meagre height from floor to trusses. As much additional height as possible was gained by panelling between the trusses.

COFFERED CEILING IN THE SAME CHURCH.

[The following named illustrations may be found by reference to our advertising pages.]

HOUSE AT BICKLEY, ENG. MR. W. CURTIS GREEN, ARCHITECT.

BRISTOL TRAMWAY DEPOT, BRISSLINGTON, ENG. MR. W. CURTIS GREEN, ARCHITECT.

THIS plate is copied from *The Builder*.

[Additional Illustrations in the International Edition.]

HOUSE OF I. D. FLETCHER, ESQ., 2 EAST 79TH ST., CORNER OF FIFTH AVE., NEW YORK, N. Y. MR. C. P. H. GILBERT, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print.]

ENTRANCE TO THE SAME.

[Gelatine Print.]

FIFTH-AVENUE FRONT OF THE SAME.

[Gelatine Print.]

HOUSE FOR E. J. HIBERT, ESQ., LOWESTOFT, ENG. MR. W. C. STREET, ARCHITECT.

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ST. GABRIEL'S COLLEGE, CAMBERWELL, LONDON, ENG. MR. P. A. ROLSON, ARCHITECT.

NOTES AND CLIPPINGS

Electric Launches in Venice. — This week the Syndic and the members of the Giunta were invited to make a trial trip in one of the new electric launches which this summer are going to enter into rivalry with the steamboats, so hated by Mr. Ruskin, which now ply up and down the Grand Canal, and the result seems to have been most satisfactory. The launch is about eighteen yards long by three and one-half broad, and is made to carry comfortably fifty passengers. It is of graceful shape, and built so as to displace but little water, and the undulation produced is so small as to be smoothed out before it can reach the houses and *rivas* on either side. The launch is fitted with 108 accumulators, and the ordinary speed is seven miles an hour, though it can do nine in case of need. It is arranged that on June 1 next two lines of service shall be opened, the one between the station and the Rialto, the other between the Piazzetta and the Lido, touching at the Public Gardens, and the price is to be ten centimes a course. It would be a great benefit to Venice if in this case electricity should win the day over steam, for the puffing little tramvia, as the Venetians call the steamers, do worse harm than merely robbing the gondoliers of their passengers, for the violent wave caused by them as they rush along is destructive to the gondola itself. In old days a gondola would yet be hale and hearty at fifteen years old, but now at seven it is worn out. The steamboat wave and the backwash dash the gondolas against each other and against the piles and the steps of the ferry piers, dislocating their slender sides, and starting their fastenings. A gondola thus quickly loses its graceful curve and acquires an ugly flat one. Nor is this all the harm done by the steamers. When Mr. Ruskin spoke of the damage done by the wave cast off behind them as they bustle along to the foundations of the palaces, people in England laughed and accused him of exaggeration; but he was right, as those living in Venice well know, for water doorsteps and wall-foundations are continually giving way, and reparations have to be made every ten or twelve years where once they were not required in half a century. — *Venice correspondence of the London Globe.*

Cedars Twenty Centuries Old. — The sturdy storm-enduring red-cedar, says John Muir in the April *Atlantic*, delights to dwell on the tops of granite domes and ridges and glacier pavements of the upper pine-belt, at an elevation of seven to ten thousand feet, where it can get plenty of sunshine and snow and elbow-room without encountering quick-growing, overshadowing rivals. It never makes anything like a forest, seldom comes together even in groves, but stands out separate and independent in the wind, clinging by slight joints to the rock, living chiefly on snow and thin air, and maintaining tough health on this diet for at least two thousand years, every feature and gesture expressing steadfast, dogged endurance. . . . Some are undoubtedly more than two thousand years old. For though on good moraine soil they grow about as fast as oaks, on bare pavements and smoothly glaciated over-swept granite ridges in the dome region they grow extremely slowly. One on the Starr King ridge, only two feet eleven inches in diameter, was eleven hundred and forty years old. Another on the same ridge, only one foot seven and a half inches in diameter, had reached the age of eight hundred and thirty-four years. The first fifteen inches from the bark of a medium-sized tree — six feet in diameter — on the north Tenaya pavement, had eight hundred and fifty-nine layers of wood, or fifty-seven to the inch. Beyond this the count was stopped by dry rot and overgrown wounds. The largest I examined was thirty-three feet in girth, or nearly ten in diameter; and though I failed to get anything like a complete count, I learned enough from this and many other specimens to convince me that most of the trees, eight to ten feet thick, standing on polished glacier pavements, are *more* than twenty centuries of age rather than *less*. Barring accidents, for all I can see, they would live forever. When killed they waste out of existence about as slowly as granite. Even when overthrown by avalanches, after standing so long, they refuse to lie at rest, leaning stubbornly on their big elbows as if anxious to rise, and while a single root holds to the rock, putting forth fresh leaves with a grim never-say-die and never-lie-down expression.

The Water-system of Pompeii. — Pompeii, like most Roman cities, had an excellent water-system, but we are able to judge of the systems in other places only by the small remains, but in Pompeii, the whole system has been laid bare, and in "*Pompeii, Its Life and Art*," by August Mau, translated by Prof. Francis W. Kelsey, there is an interesting description of the water-supply of the city. Remains of the great aqueduct near Avellino, a dozen miles east of Nola, have been discovered, and this aqueduct followed the base of Vesuvius and furnished water to Naples, Puteoli, Baiæ and Misenum, but the source from which Pompeii received its water-supply has not been discovered. The construction of the older baths showed that a free use of water was contemplated. There were many fountains along the streets, most of them at the corners. They were filled by pipes connected with the water-system of that city, and these fountains bear witness to long use by depressions which have been worn in the stone by the hands of those who leaned forward to drink. Water-towers were found at the sides of streets; they were small pillars of masonry which were raised to the height of 20 feet. There was a small reservoir of water on the top, presumably of metal. In all the houses of any size and importance there were flowing jets. Thus, in the famous house of the Vettii, which was discovered a few years ago, there are no less than sixteen jets, and water was not stinted in any of the three baths which have been discovered. The water-pipes were made of sheet-lead folded together, the transverse section somewhat resembling that of a pear. Their size was regulated by the pressure and the water was turned on and off by stop-cocks, which were much like those in use to-day. — *Scientific American.*

The Victor Emmanuel Monument. — This great monument of Italian unity will, perhaps, create a greater change in the aspect of Rome than almost anything else. It will continue the succession of pompous monuments set up by the Popes of the last two or three hundred years, but will be larger. As a design it is hardly satisfactory; there is too much striving after novelty of detail, and the way in which the "orders" are mixed up together — Doric and Ionic columns side by side — is anything but satisfactory. It is difficult to understand what the effect of the finished monument may be. Is seems intended to form a species of retaining-wall to the platform of the Capitol. Immediately behind it, but completely hidden, will be the ancient basilica of Ara Cœli, which stands on the highest point of the Capitol. Ara Cœli, with its long flight of steps, will form a sort of backing to the whole monument, in the way that some of the fountains of Rome, for instance, the Trevi, are backed up by houses. In front of the monument will be an immense piazza of partly square and partly semicircular form. — *The Builder.*

Concrete as a Combustible. — Some time ago we received reports to the effect that a mass of concrete had taken fire in the boiler-house of the electricity works at Chester. At first we put these down to the overheated imagination of the local reporter, but their recurrence and circumstantial nature led us to make inquiries of the resident engineer, Mr. F. Thursfield. To our surprise we found that our information was correct. The concrete used for the foundations of two of the boilers consisted of one part in seven of boiler ashes; the brick lining under the boilers was omitted in one place, so that the red-hot soot lay in contact with the concrete. The latter became ignited, and the whole block, 8 feet deep, disintegrated; in consequence it was found necessary to pull down the brickwork of the boilers, and to remove the whole of the concrete block. The possibilities opened up by this precedent are appalling; we have seen so-called fireproof floors built of similar materials. Of what use will they be? The calorific value of the boiler-ashes employed must have been considerable, and in the present scarcity of coal, engineers may find it worth their while to stoke with concrete! We commend this suggestion to the consideration of Mr. Crompton, owing to his well-known interest in cheap fuel. In view of the importance of the phenomenon, we should be glad to receive details of similar experiences — if, indeed, it is not without precedent. — *Electrical Review.*

Controlling the Detritus of Torrential Streams. — A novel scheme for impounding débris in the Yuba River in California has been worked out, mainly by Assistant Engineer Hubert Vischer. The problem of governing vast quantities of eroded detritus in torrential streams was practically new, the California papers claim, about the only former attempt in this line being at the headwaters of the Rhine, where denudation of soil made trouble for Swiss peasants like that sought to be remedied in California. In the Yuba the coarse material is to be held by long and comparatively low dams at different points, but the most novel feature is that to take the fine sediment out of the water. There is to be a settling-basin three miles long into which the river will all flow at ordinary stages. If the water poured out in a stream at the lower end the currents would prevent much settling. So Mr. Vischer has devised a scheme to make the water percolate through eight pyramidal structures of logs, planks, cement and cracks. The water will flow through a great number of half-inch or less slits from all sides of the pyramids, which are to have seventy-foot bases and are to be strung across the basin. The flow can thus be regulated and currents avoided. This basin is calculated to hold 14,000,000 cubic yards of fine sediment, and can be enlarged to hold 50,000,000 cubic yards more. The estimated cost of the work is $800,000, and $500,000 of State and national money has been available since 1896, awaiting a practical solution of the problem. — *N. Y. Evening Post.*

A new Method of blowing Hollow Glass Vessels. — Several interesting novelties have been introduced at the glassworks of P. T. Sievert, at Denben, near Dresden. Hollow glass vessels of unusual dimensions are made in the following manner: The glass is ladled from the furnace and poured on an iron plate, which is hollow and provided with very fine perforations for admitting compressed-air. A portion of the glass is caught in lateral grooves, and the glass slab supported in this way, while the plate, with the glass on it, is turned over. The glass begins to ooze out by its own weight, and the compressed-air is turned on to finish the shaping. Suitable supports or moulds are applied from underneath. Professor Walther Hempel reports in the *Chemische Industrie* that he saw a semi-spherical glass vessel, half a cubic metre in capacity, made within three minutes. The yielding of the glass to gravity was checked by raising another iron plate from below, by means of a toothed rack. Cylindrical glass vessels, troughs, etc., are prepared in a similar manner in sizes which no blower could manage, simply for want of strength. But the process lends itself also to the making of smaller-size articles, bells for lamps and lanterns, developing-troughs, etc. Another novelty is curious. The glass is poured on an iron plate as before, and rolled to the required thickness. A pad of asbestos paper, impregnated with water, is then placed on the glass surface, and the respective mould quickly applied. The mould cuts off a slab of glass of the desired size, and the steam, generated from the asbestos paper, gradually forces the soft glass into the mould. The process works much more expeditiously than glass-blowing, and has one advantage over pressed glass. As the inner side of the glass is only exposed to the action of the water vapor, it retains its natural fine polish. Color-effects are produced in the following way: The pattern, which, we presume, must not be too elaborate, is drawn on thin paper. The pigments are applied to the paper in the shape of powdered glass of the required color, the respective spots having been painted with some sticky substance. The pattern is now put on the glass, when still on the iron plate, pattern downward, and fixed by means of a roller. The paper flares up instantaneously, while the bits of powdered glass fuse into the glass plate, yet preserving some of their sharp edges so that the light is reflected in all directions. — *Engineering.*

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